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THE
AMERICAN POULTRY BOOK;
BEING
A PRACTICAL TREATISE ON THE MANAGEMENT
OF
DOMESTIC POULTRY.

BY MICAJAH R. COCK.

"A very considerable part of all the property of every nation consists of its domesticated animals."—WM. COOPER, *Ann. Discourse*.



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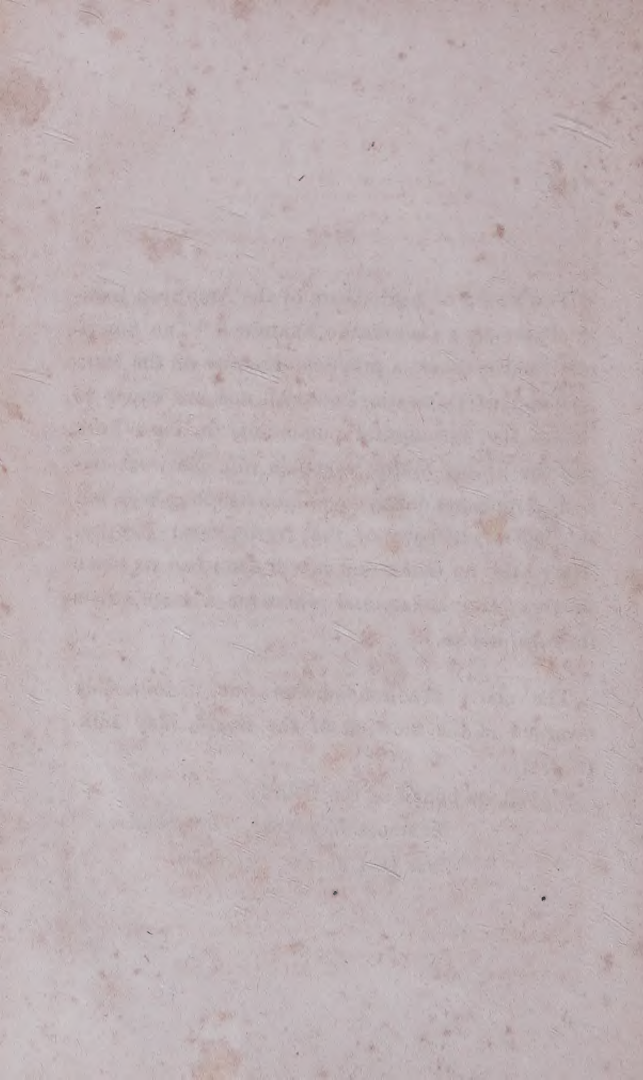
THE Board of Agriculture of the American Institute have, by a Committee, examined "The American Poultry Book, a practical Treatise on the Management of Domestic Poultry," and are happy to assure the agricultural community in New-York and the United States, that this valuable work exactly supplies a deficiency which has long been felt in this department of the Agricultural Library. They have no doubt that it will soon find its place in every farmhouse, and wherever a taste exists for rural habits.

The above recommendation was unanimously awarded at the meeting of the Board, May 18th, 1843.

Signed, on behalf of the Board :

NICHOLAS WYCKOFF, *Vice-president.*

JNO. O. CHOULES, *Secretary.*



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WILL SHORTLY BE PUBLISHED BY THE SAME AUTHOR,

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INTRODUCTION.

THE following pages originated in an attempt to collect and embody in a methodical form the various notices respecting the treatment of poultry in America, scattered through our various periodical publications. This was made exclusively for my own use. The best works on this subject are in foreign languages ; those in English being either mere translations, or meager and inaccurate in their details. It was obvious, indeed, that no treatise on this subject adapted to our peculiar position in a country extending through twenty degrees of latitude had been published, and the necessity of an American work became apparent. Whether I have rightfully executed the self-imposed task is not for me to determine ; but if the following pages, by exciting public attention

and awakening honest criticism, should give rise to a better treatise, I shall be amply compensated.

The importance of poultry as a branch of rural economy is little appreciated or understood. Scarcely anything pays the farmer a better profit. Fowls require most attention at a season of the year when he has comparatively little to do, and during the summer and autumn they can almost provide for themselves. Under favourable circumstances they procure their own food, and then the profits in eggs and chickens form a clear gain. Many small farmers, indeed, depend upon their poultry to supply them, either by sale at market, or by exchange at the store, for their smaller groceries, such as tea, sugar, snuff, &c. To those who have travelled through our Southern States, the frequent occurrence of "chicken fixens" shows their importance as an article of food, while eggs are the constant accompaniment to the perpetually-occurring bacon.

Success in raising poultry depends main-

ly upon a suitable climate, and whenever that is unfavourable, we must remedy the evil by extra attention and care. The importance of climate is well understood by our farmers, who have uniformly better success in a hot and dry season than a wet one; and our poultry suffer more from a wet winter, even if mild, than from one that is intensely cold, provided it be clear and dry.

A dry, warm climate is so important for the successful rearing of poultry, that in England, for example, they are compelled to depend upon foreign countries for no inconsiderable portion of their supply. It appears, from the custom-house returns of the year 1838, that eggs were imported into England (although loaded with heavy duties) from the Continent to the value of more than a million of dollars. Mowbray, the author of an English work on poultry, instead of admitting the fact of the unsuitableness of the climate of England for such purposes, treats it in the following absurd manner: "In Britain, where a greater quan-

tity of butchers' meat is consumed than probably in any other portion of the world, poultry has ever been deemed a luxury, and *consequently* not reared in such considerable quantities as in France, Egypt! &c.

The importance of this subject, in a pecuniary point of view, to our own country has, we suspect, been little appreciated. It will be better understood when we refer to the agricultural statistics of the United States, as furnished by the latest census published, namely, that of 1840. It should, however, be borne in mind, that the returns from North Carolina, Kentucky, Michigan, Florida, and Wisconsin, are incomplete, and not included in this list.

	Value of the poultry.
Northern States - - - - -	\$1,175,916
Middle States - - - - -	4,085,312
Southern and Western States and Territories	5,671,382
Total - - - - -	<u>\$10,932,610</u>

If to this we add the supposed value from the omitted states and territories, we shall have for the whole Union a total value in poultry exceeding twelve millions of dol-

lars.* The importance of this subject becomes more apparent if we take a single state, and compare the value of its poultry with that of its other animal products. By the same census it appears that in the State of New-York the value of the poultry was \$2,373,029. This is more than the value of all the swine in the same state, is nearly equal to half the value of its sheep, the entire value of its neat cattle, and is very nearly five times greater than the value of all its horses and mules.

The importance of climate in rearing poultry may be farther inferred from the following facts, gathered from the same census. We will take a certain district in the northern and eastern sections of the Union, where the climate is cold and damp, and compare it with a district of nearly an equal population in the Southern States. Thus, for example : the States of Maine, New-Hampshire, and Vermont are nearly equal in population to those of South Caro-

* Since the above was written, full returns from all the states have been obtained.—See chapter xi.

lina and Alabama, and yet the value of poultry in the first only equals \$397,460, while in the second the value of the poultry amounts to \$1,419,814. In the Western States, fowls are so prolific that eggs are commonly sold at the rate of 90 cents a bushel, estimated to contain forty-five dozen. For farther details on this subject we would refer to the eleventh chapter.

In many parts of Europe, the care of the poultry and the rearing of chickens are intrusted exclusively to women; and this seems, indeed, peculiarly within the province of that sex, who are so pre-eminent for their kindness towards the brute creation and their solicitude for helpless infancy. The writer would fain hope to induce his countrywomen to assume the charge of this department. Their husbands, fathers, or brothers would soon be shamed out of their present careless and wasteful practices. They would soon learn that he who suffers his poultry to range through his house, to drown themselves in the swill-tub, to scratch up his garden, or to trespass on the prop-

erty of another, obtains the reputation not only of a slovenly and shiftless manager, but of a disreputable neighbour, besides practising a miserable and wasteful economy.

I cannot conclude this preface without returning my thanks to Dr. J. J. Smith, who has kindly furnished me with the facts embodied in the first, fifth, and sixth chapters, and obligingly consented to assist me in the correction of the following pages.

THE AUTHOR.

Montville, N. Y., 1843.

THE
POULTRY BOOK.

CHAPTER I.

Natural History of the Common Barnyard Cock and Hen.—Origin.—Species.—Varieties.—Breeds or Races.—None originally from America.—Anatomy.—Moulting.—Age.

THE origin of the domestication of the common cock and hen is unknown, but is supposed to have been among the first conquests made by man. In the earliest human record it is stated that “the Spirit of God *moved* upon the face of the waters.” Some commentators upon this passage say that the original word is *brooded*, which is taken from the idea of a hen brooding over its young. The Hebrew code regulating the use of food is altogether silent on the subject of fowls; but, as the peacock was domesticated in the time of Solomon, or about 2800 years ago, we have strong grounds for entertaining the belief that the more useful

domestic hen, which in its native state belongs to the same region, must have been known long before that time.

In most of the works on poultry, the domestic cock is declared to be a pheasant, and we accordingly find it described under the improper name of *Phasianus gallus*. This conveys an erroneous idea. According to modern naturalists, more especially a Dutch writer, *Temminck*, our domestic cock must be separated from the pheasant (*Phasianus*), and form a distinct genus under the name of *Gallus*, which had long since been proposed for it by a French naturalist. It is thus described :

GENUS GALLUS.—*Brisson*.

Bill smooth at the base, thick, slightly curved. Nostrils covered by an arched scale. Generally an erect, fleshy crest on the head. Throat with fleshy wattles on each side of the lower mandible. Ears naked. Feet armed with strong spurs. Anterior toes united by a membrane as far as the first joint. Tail of 14 feathers, compress-

ed, more or less arched, ascending. *In the female*, the comb and wattles less developed, and the tail wants the long pendent feathers.

The original stock or species from which our common cock is derived is unknown. It is now, however, generally supposed to have sprung from a species (*Gallus Bankiva*) still abundant in a wild state in the jungles of Sumatra and Java. *Cuvier* supposes this to resemble most our domesticated fowl, although *Temminck* thinks that the varieties 8, 9, 10, and 11, mentioned below, originated from other species as yet undiscovered in their native state ; as they all, however, breed freely together and produce prolific offspring, this may well be doubted. Hitherto all the known species are natives of Asia, and it is very doubtful whether America contains any species from which our common cock can have been derived. There are, however, a few authors whose travels would seem to imply the contrary, but their testimony scarcely amounts to any

degree of certainty. *Acosta*, the Jesuit, asserts that the common cock and hen existed in Peru before the arrival of the Spaniards. *Sonnini*, who travelled through the forests of Guiana, saw a small bird about the size of a pigeon, with a fleshy crest on its head, and its cry resembled exactly the notes of the domestic cock. *Stedman* also mentions that the natives in the interior of Dutch Guiana raise a small species of fowl which appears natural to the country.

The following are the principal varieties or races found in the works of authors, and in the poultry-yards of the curious.

1. *Domesticus*. The ordinary breed, such as are seen on every dunghill, of all sizes and colours, and presenting no remarkable peculiarities.

2. *Pugnax*. The *Game-cock*; known by his small head and neck, and his quarrelsome and impetuous disposition.

3. *Cristatus*. *Top-knot*, with a tuft of feathers on the head instead of a fleshy comb.

4. *Pusillus*. The *Bantam*. Dwarfish in size, the legs feathered.

5. *Pumilio*. The *Smooth Bantam*. Dwarfish ; legs not feathered.

6. *Giganteus*. *Malay*. Very large.

7. *Pentadactylus*. *Dorking*. Large, with five toes on each foot. This, however, is said by some recent English writers not to be peculiar to this race.

8. *Morio*. *Negro fowl*. Comb, wattles, skin, and covering of the bones black. From India.

9. *Lanatus*. *Silky Hen*. All the feathers disunited in the webs, and resembling silk. From Japan.

10. *Crispus*. Frizzled or Friesland hen. All the feathers reversed, and, as it were, curled. Smaller than common poultry. Java. Japan.

11. *Ecaudatus*. Rumpless hen. With no tail ; the last caudal vertebra being wanting. *Ceylon*. In alluding to this variety, Buffon asserts that the greater part of the cocks and hens of Virginia have no rump, although they are unquestionably of English origin. "He is assured," he says, "that when fowls are transported to that colony,

they soon lose their rumps ;” and, taking this for granted, gravely imputes it to the climate.

These are the principal varieties, and from them proceed all the various breeds or races found in our poultry-yards. More than twenty are enumerated by authors, but it is scarcely necessary or useful to treat of them here. Previous to describing more in detail the usual races found in this country, we conceive it to be highly important to say a few words on the structure of the interesting animals which we propose to rear. It is not our purpose to enter into minute anatomical details, but simply to present a few observations sufficient for the general reader.

The bones of birds, although much lighter, bear a close resemblance, in their number and position, to those of quadrupeds, with striking deviations, however, in their shape. The bones of the neck are more numerous, and vary in birds from nine to twenty-three. The breastbone is much expanded and dilated, and all the bones of

the pelvis are firmly united to the backbone. They are covered with feathers, which are kept in order by an oily substance obtained from a small gland situated on the rump. The gullet is enlarged at its origin, where it is called the crop or craw, and thence the food passes, after some little delay, into the true stomach or gizzard. This is composed of powerful muscles, and is lined with a thick and strong membrane. Into this the food is received and ground up, which process is aided by gravel and other equally indigestible substances. The quantity thus taken in is, doubtless, regulated by the sensation of the stomach, but this instinct is so far deranged in domesticated birds, that we have known death to ensue from over-distension. In one case, the cavities of the gizzard and crop were filled with gravel-stones of various sizes ; in another, the same parts were so much distended with the common yellow rose bug, that death ensued.

The intestines and organs connected with generation terminate by a common opening

in the vent. The liver is large, and composed of two lobes. That of the goose, when enlarged by disease artificially induced, is a luxury highly prized by epicures. The pancreas is a long and narrow gland. The spleen is small, and lies between the stomach and left lobe of the lungs.

The lungs are large, and fill up the spaces between the ribs, and have large cavities communicating with the bones, and extending even to the quills. This arrangement tends to make the bird lighter, and to assist it in flying. An experiment is noticed by authors to show how complete and extensive is this connexion between the bones and the lungs. One of the wing-bones of a heron was broken and the windpipe stopped; breathing was carried on a whole day through the broken limb. The kidneys form a row of irregular lobes on each side of the lumbar vertebræ, and fill up cavities in the haunch or side-bones; a short tube leads from each to the vent. The urine is white and chalky. The testicles lie across the spine, one before the other, and are of a

yellowish-white colour, varying much in size at different seasons ; they communicate by short tubes uniting and ending in the vent. In the hen, the yolk-bags are enclosed in a single ovary, and pass out by a wide passage terminating on the left side of the vent.

We have stated enough for general purposes ; it only remains to add a few words on that particular process which occurs periodically to birds, and which appears confined to no latitude, for it has been observed among fowls from Iceland to the equator. It is usually known under the name of *moulting*, and implies the shedding of the old feathers and the acquisition of new ones. During the summer, the feathers of birds are exposed to many accidents : many fall off spontaneously, some are torn off in their quarrels, others are broken or damaged, and in many species they are plucked off to line their nests. In this state, when autumn approaches, they become feeble, melancholy, and languishing ; their feathers bristle up, and they are constantly engaged in plucking out those which have a tendency

to fall. The process of laying ceases, and when killed their meat is meager and without flavour. The old feathers appear to be pushed off by the new ones, and in consequence of this renewal their covering is rendered more perfect, and in colder climates they are better able to bear the rigours of winter. Pullets, by which we mean the young of the first year, are not subjected to this process. It commences with the second autumn, and every successive year becomes more difficult and of longer duration. This fact points out to us the propriety of disposing of all fowls after the second or third year. In this latitude, the process of moulting usually takes place in the months of November, December, and January, beginning a little earlier in some instances, and ending later in others. It is said in the books to last but one month in some cases, but this has not been confirmed by my experience. Many experiments have been made to induce fowls to lay during this period, but, as it seems to me, it is neither advantageous nor desirable. Moulting is a process of nature, no

doubt instituted for wise and useful purposes, perhaps designed to interpose a period of rest after the long-continued and exhausting operation of laying and taking charge of the young. Any artificial means to interrupt this natural process must, I should be disposed to believe, be decidedly injurious to the fowl. There is no doubt, however, that during this process an extra attention to their food and warm lodging will much ameliorate their condition, and probably shorten this barren period.

The age of the domestic cock varies from seven to ten years. They have been known to live longer than this. Buffon, indeed, asserts that they may reach twenty years; but, unfortunately for them, we have no interest in preserving their life for any long time, and it is only by some very rare accident that they are allowed to die of old age. Aged fowls are readily recognised by their listlessness, the few eggs they lay, the great length of the period of moulting, the length of the spurs, which are also found on the females, as well as the disposition to crow, and the roughness of their feet and combs.

CHAPTER II.

Of the usual Breeds or Races raised in the United States.—Game.—Top-knot.—Italian.—Malay.—Bantam.—Advantages and Disadvantages of each.—Colour.—Change of Breed.—Size.—Proportion of Cocks to Hens.—In some Cases entirely dispensed with.

WE have already given a list of the various kinds of the domestic fowl; in this chapter we propose to make a few observations on the relative advantages and disadvantages of each. The first on the list is,

1. *The Game Cock.* This breed is readily distinguished by its small body, long and arched neck, and small head; by its fierceness, its restless movements, and unquiet eye. The eggs are rather small, and the flesh is considered by many to be superior to that of any other breed. They are very prolific layers, and on that account may be occasionally introduced into the poultry-yard. Great care, however, should be taken not to allow too much of the blood to appear, or you will have your yard a perpetual scene of fighting

and confusion. The disposition to fight commences with the chick just escaped from the shell, and they injure each other so much that they are extremely difficult to raise. As might be inferred from their restless disposition, they are very unsteady sitters. The high price which the game cock bears may render it an object to raise them, but every right-minded and benevolent person will scrupulously refrain from rearing them for such brutal purposes. A few pullets of this breed may be mixed up with the others, but cocks of the pure blood should be marked for the spit as soon as they appear.

2. *The Top-knot.* This is the variety before mentioned under the name of *Cristatus*. Of this there are several races: The *Poland*, which is said to have been first introduced into Holland from the East, and from thence distributed through Europe and America. The true *Poland* is of a shining black, with a tuft of white feathers on the head. Another race is the *Golden Poland*, which is highly prized by the bird-fanciers in England and France for the beauty and singu-

larity of its plumage. It is of a bright yellow, with a small round black spot on each feather. I have kept this breed on the faith of its being a marvellous layer, but they did not succeed with me. Their large tufts of feathers on the head prevented them from seeing and guarding against the attacks of the other fowls in the yard, and they moped in corners and pined away. Their properties as layers were not remarkable, and the chickens were exceedingly tender and difficult to raise, so that, in the end, I gave them away to others who wished to preserve them for their beauty. I have some of the mixed blood of this race which lay very well. Perhaps this breed would answer better in the Southern States. The top-knots should be occasionally clipped, to prevent them from irritating and inflaming the eyes. There is a general impression, which I believe to be correct, that all of this race are good layers, but very indifferent sitters.

The *Every-day Hen* is another sub-variety of this breed, so called from the absurd notion that it lays an egg every day through-

out the year. Those who give credence to this may fortify their belief by the authority of Aristotle, who speaks of certain fowls in Illyria who habitually lay three eggs a day. This miraculous performance has, however, not been witnessed out of Illyria.

3. *The Italian Hen.* So called, although it was introduced into Europe from the Barbary States. They are mostly glossy black, and are more particularly distinguished by the enormous size of their combs and wattles, which are equally conspicuous in both sexes. They are in great repute as layers, but are delicate, and require warm lodgings in winter. I should think them better adapted to the Southern States.

4. *The Malay.* This is the largest of our breeds. Dampier says that he saw one of this breed so large, that, standing on the floor, it picked up crumbs from the table. They are mostly yellowish or reddish-brown. The eggs are large and well flavoured. The flesh of the chicken is not very delicate, and is better adapted for broth than anything else; in the adult it is coarse and stringy.

They make large capons, but are considered to be very indifferent layers, and not very steady sitters.

5. *The Bantam.* This breed is kept more for its grotesque figure than for profit. It is at once recognised by its feathered legs and diminutive size. It is a good layer, but the eggs are very small. There is another variety of this breed, which has been raised in England, which is not much larger than a pigeon, and with smooth legs. Aside from the curiosity of the thing, I know of no object in raising this breed, unless for the unworthy purpose of passing them off for chickens out of season. The prudent farmer will hesitate to introduce them into his poultry-yard, unless he wishes to diminish the size both of his eggs and chickens.

These are the chief varieties commonly known among us. There are others which I have not seen; such is the Dorking fowl, an English breed, originating, I presume, from the Malay. It is very large, and some of them have two hind toes.

The question has frequently been asked,

Which of these breeds is best adapted to the poultry-yards of the Middle States? To this I would reply, that no one breed will thrive or be found profitable if kept exclusively. The natural tendency of all peculiar varieties effected by domestication is to deteriorate, and such require great and extra attention to keep pure, and whenever this is attained, they are found to be delicate, and very liable to disease. A particular breed may, indeed, be highly valuable for some especial purpose, but, at the same time, with qualities which render them a nuisance in other respects. The most recent and best work on this subject in France, *Manuel du Zoophyle*, lays down the following rule for selecting fowls for laying: "The best layer is black and of a middling size, the head rather large, the comb red and pendulous on one side, the feet bluish, the eye bright, the neck thick; she should be noisy and lively; she is old at the fourth year." As a general rule, however, it would be better to obtain, if possible, the first stock of the poultry-yard from a colder climate; those

procured from southern latitudes are exceedingly sensible to the cold, and rarely lay except during the heats of summer. Northern fowls, on the other hand, if originally good, will improve very much by removal to a warmer latitude.

With respect to *colour*, there can be no particular rule, although almost every one has his fancy on this subject. Some prefer the *dominico* or blue-spotted hen; others, the oldfashioned dunghill, of a reddish or yellowish colour; while others, again, assert that the jet black hen is the best. My own experience is in favour of the latter; I think they are more hardy, moult with less difficulty, and commence laying in the coldest weather, while fowls of other colours are drooping and inactive. Among experienced marketmen the preference is given to yellow-legged fowls. They differ in no remarkable degree in flavour from any other, but they appear handsomer when dressed, and on that account, I suppose, find a more ready sale. I conceive fowls of a pure white colour to be the least adapted to our climate, and I

would guard against introducing them into the poultry-yard. I have found them to be, at best, very indifferent layers.

Most persons are desirous to have fowls of a large size, but this may be carried too far. When very large, they consume a greater quantity of food, and do not, even with this, fatten well; they are, in general, indifferent layers, and not very steady sitters.

The better practice would seem to be, in order to make a poultry-yard most profitable, to select no particular breed. Commence with pullets and cocks of the first year, of all the breeds mentioned above, except bantams, and without any regard to colour excepting those of a pure white. It would be well, if possible, to select the cocks from the same yard. Every year exchange a nestful or two of eggs with your neighbours, or such as have good fowls. In transporting eggs from a distance for breeding, it should, however, be borne in mind, that much motion will destroy the germinating power. However carefully packed, the rude motion of a wagon will render them unfit for hatch-

ing; and even in a carriage with springs, they should be carried by hand. By covering them with lard and taking care not to handle them roughly, I have known eggs laid in Hamburg to be hatched in New-Jersey. By pursuing steadily this practice of exchanging eggs, you will yearly infuse new blood into your stock, and avoid the inconvenience of breeding in and in. Without being aware of this fact, many farmers find their stock *running out*, as they term it, by which they mean that they get fewer eggs every year; and in order to remedy it, kill them all off, and resort to others to renew their poultry-yard.

The choice of a cock is a matter of considerable importance. He should be active and restless; not very large, with an erect head and animated eye; with a powerful voice, thick and stout bill, long spurs, claws strong and slightly crooked. A black or deep red plumage, or that variety called birchen back, is generally preferred. He should be young, as he begins to propagate at four months, and his vigour scarcely lasts

more than three years. In choosing between two cocks, *Parmentier* proposes a plan which he says was first suggested to him by *a lady*. Make them fight, and select the victor. Some cocks are peevish and quarrelsome, beating and annoying the hens on all occasions. If they are favourites, pass one of their feet through a hole in a piece of leather: this has the effect of rendering them quiet and tractable; but a far better method is to exchange them away, or otherwise dispose of them, as soon as possible.

The due proportion of cocks to hens is not yet settled, and, indeed, must vary with the climate. The old rule was one to ten or twelve, but it has recently been maintained that there should be one cock to four or six hens. Where the chief intention is to raise chickens, and the quantity of eggs is a matter of less importance, this proportion may be, in these latitudes, near the truth. When, however, it is recollected that cocks consume an enormous quantity of food, it would seem desirable to reduce them within the smallest possible limits. The peace and

quiet of a poultry-yard are also in favour of a small number. In my own case, I am anxious to raise a few chickens only, and to obtain the largest possible quantity of eggs; from various experiments, I should suppose that one cock to twelve or fifteen hens is quite sufficient.

Mr. W. B., who lives in the southern part of this state, and has a poultry-yard of from eighty to one hundred hens, keeps *no cock whatever*. He is certain that he gets more eggs, and he thinks that the presence of the male only induces the hens to sit. He cares, of course, nothing about chickens. He buys every autumn enough of these to replace those of an older growth, and keeps none longer than two years.

As most persons, however, who keep fowls, prefer to raise their own chickens, the better plan is to keep a few cocks within the limits recommended above, and to keep none longer than two or three years.

CHAPTER III.

Necessity and Advantages of Confinement.—Poultry-yard.—Substitute for it.—Appurtenances.—Feeding-hopper.—Water-tank.—Gravel-boxes.—Lime.—Sand or Ashes.

THE propriety of confining poultry within an enclosure has been often questioned. In some parts of Germany, large landed proprietors are in the habit of allowing them to run wild, and only feed them when the snow is on the ground. Of course they become quite wild, are smaller in size, the comb, tufts, and tail feathers are less conspicuous, and, in fact, they approach nearer to the original stock. Their flesh, also, is said to have a wild and game-like flavour. Of course, under such circumstances, few or no eggs are obtained, and gamekeepers are necessary to feed them, and to protect them from the depredations of the smaller quadrupeds.

When a few only are kept for ornament about the grounds of a mansion-house, no

particular enclosure is necessary ; but when numerous, and it becomes important to render them profitable, it is absolutely necessary to keep them within certain limits. Nothing has a more slovenly and out-at-elbows look, than to see fowls ranging about a farmhouse, roosting upon carriages and harness, intruding into and defiling the kitchen, and even the parlour, dipping into the swill-tub, scratching up the garden, and committing other abominations. It is painful to see children occupied, more than half their time, in chasing them out of the garden, the women—good souls !—scolding away their sweet tempers, and the men grumbling, when a few dollars judiciously expended, with a little extra attention, would remedy the whole. No man who respects himself or the rights of his neighbours, no one who regards true economy, or even the ordinary decencies of life, or is desirous to bring up his children in habits of order and neatness, or to give a good example to others, will permit his cattle or even his poultry to run wild about his grounds or in the road, or more frequently

trespassing upon his neighbours. In the case of poultry, the remedy is obvious, simple, and unexpensive—a poultry-yard.

For this purpose, select any suitable piece of ground, of from two hundred feet square to half an acre, according to your wants and means. It should be dry and airy, and yet sheltered from the bleak north and east winds. If possible, a porous sandy soil should be preferred, with a spring or stream running through it. It must be surrounded by a high fence, with a poultry-house and the necessary appurtenances within the enclosure. An extensive poultry breeder in Connecticut has his poultry-yard surrounded by palings of a peculiar shape. On the ground he uses boards, put on lengthwise, and on this his pales rest. These pales, instead of being cut with parallel sides, are broader at the bottom than at the top, so that, in fact, he has a close fence below two or three feet high. This is a great advantage in the case of ducks, geese, and young chickens, and to exclude noxious vermin.

In this country, however, few are willing

to incur this expense, and we have fortunately at hand the means of obtaining an equal degree of comfort and security for our fowls without any very considerable outlay of money.

Every barnyard, if properly situated, is placed facing the south, and is, or should be, enclosed within high stone walls, or a close board fence. It is warm, sufficiently large for a flock of a hundred or more hens, and, by elevating the fence a few feet higher by means of laths or pickets, you have a convenient and suitable poultry-yard almost ready made to your hands. The dunghill we also know to be their favourite resort. It affords them a grateful warmth in winter, and the foul seeds thrown out in threshing, the undigested grains, and the larvæ and eggs of insects, furnish them with a grateful repast. Many articles, likewise, are usually thrown into a barnyard, such as ashes, refuse vegetables, pounded oyster and clamshells, refuse mortar, &c., which are greedily sought after by fowls; and as every well-managed barnyard contains a well or cis-

tern, the means of supplying your poultry with water are ready at hand.

The only objection I have ever heard against this arrangement is, that if many young cattle are kept in the same yard, they become lousy, in consequence of being so closely in contact with the fowls. I suppose this belief to be entirely unfounded, for in all the instances which I have seen of this abundance of lice, it was obviously to be attributed to the low and neglected condition of the cattle themselves. Moreover, the henlouse (*Ricinus gallinæ*) is both generically and specifically distinct from those found on cattle, and it is impossible for these parasitic vermin to live and increase on any other kind of animal than that to which they naturally belong. So far is this law of nature carried, that, of the three kinds of vermin found on man, each is found only on that particular part to which it naturally belongs, and is scarcely found in any other situation.

My plan is to elevate the fence of the barnyard, by means of pickets, to the height

of ten feet. I have seen the same purpose more cheaply effected by means of upright laths pointed at the end, or it may be made more ornamental by a lattice-work made of the same cheap material. Some fowls will fly over the highest fences, especially those which you may have obtained from the lazy and improvident farmers described in the preceding chapter. It will be well, therefore, at the commencement, to begin by clipping one of their wings; and this will, in general, be found sufficient; but with some light-bodied and active fowls, particularly the game breed, it will be necessary to repeat this operation every year.

Fowls are said to be unwilling to fly over pointed palings, as they must first alight on them before getting over; but, unless they are high, they will occasionally escape over these. I have seen a fence only five feet high, with a thin wire stretched along it, a few inches above it, and slightly in towards the yard. The fowl aims at the top of the fence, but when she gets there, finds it impossible to retain her position, in conse-

quence of the pressure of the wire against her breast, which forces her back into the yard before she can make another flight. It is, however, said to be effectual, and, as the experiment may be made with great ease and at little expense, it is worthy of a trial.

In one part of this yard there should be a small door, which may be raised about two o'clock in the afternoon in summer. A slight call, with a handful of corn, may be necessary at first, but in a few days they learn to watch for the signal, and sally out with great eagerness, cropping the grass and catching insects. They return of their own accord, for the most part, towards sunset, or may be readily induced to do so by calling them in at this time, when the door is closed until the proper time of the following day. There is some little trouble in this at first, and the better plan is not to feed them until the proper time for their return to the yard. But the trouble is amply repaid by the facility which it affords for gathering the eggs; we are also enabled to watch those

hens which are disposed to sit, to furnish them with the proper number of eggs, or, if required, to prevent them from sitting altogether.

We have now, at a small expense, a complete enclosure, and it remains for us to specify such fixtures as are required for their comfort and wants; and this naturally leads us to the consideration of their food. Fowls are said, in the books of natural history, to be granivorous, or feeding exclusively on grain or seed; and for this the structure of their stomachs, or gizzards, seems particularly adapted. In a state of domestication, however, the case, as we all know, is widely different. They are, in fact, omnivorous, and eat indiscriminately vegetables, meat, berries, fruit, seed, fish, or any fatty substances.

In the ordinary way, farmers are accustomed to suffer their poultry to provide for themselves, and scarcely ever trouble themselves to feed them, unless in very inclement weather, and when the ground is covered with snow. This is, however, a nig-

gardlessly practice, and recoils upon the owner. Poor cattle are signs of poor-witted owners, and the same rule will apply to poultry. I have been frequently asked how much food is requisite for any given number of fowls. To this I reply, that I have no certain rule, for I keep it continually before them. Some intelligent farmers, who are aware of the advantages of this practice, throw down the corn in the ear in a heap, and permit the fowls to help themselves. This, however, invites mice and other vermin, and is a slovenly and wasteful mode of proceeding.

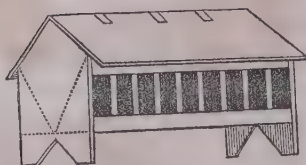
To keep them constantly supplied with food, I had been in the habit of keeping a box, covered with a coarse grating, constantly filled with grain; but it was liable to many objections, and did not suit me. I looked into the English works on poultry, and found an apparatus which appeared to answer very well the purposes for which it was intended, but the mechanism was almost as complicated as that of a watch, and it was too costly. The box is locked above, to keep out thieves, and is closed below, to

exclude vermin; the hen hops on a pole, which, by a spring, opens a little trap-door, and presents the food to view. When she is satisfied, she jumps off, and the trap-door falls and closes. It is very ingenious, but must be expensive, and liable to get out of order.

I saw in the *Cultivator* a description of a *feeding-hopper* so superior to any yet invented, that I immediately set about the construction of one similar to it, with some slight alterations. Any person can make it after the following directions. In appearance it resembles a long hen-coop, but with a peaked roof, and is open on both sides.

Take a stout plank of the ordinary width,

Fig. 1.



and of any length, but it is scarcely worth while to let it exceed six feet, unless you have more than a hun-

dred fowls. To each end nail a piece of the same plank, eighteen inches or two feet high, in such a manner that the long plank

which forms the bottom of the hopper will stand about four inches from the ground. The upper part of these end-pieces is cut angular, so as to receive a peaked roof. Nail a thin piece of board, commonly called thin stuff, four or five inches wide, along each edge of the bottom-plank, so as to rise about an inch and a half above the plank. A similar strip, but not more than two inches wide, is to be nailed from one end to the other, connecting the upper parts of the end-pieces. Against the inner sides of the two end-pieces nail two battens, meeting on the bottom-plank, and forming the letter V, as shown by the dotted lines on the end of figure 1. The distance apart of the upper ends of these battens will be determined, of course, by the width of the end-pieces. Having first fastened narrow upright slips along on each side, wide enough apart to admit the passage of the head of a fowl between them, by nailing them to the top and bottom boards, you take two thin boards, nine or ten inches wide, and place them inside, resting on the battens on the end-pie-

ces. If the feeding-hopper is long, these boards will require a support in the centre. They should not approach each other below nearer than half an inch, nor come within half an inch of the bottom-plank. Then take a broad thin board, or two if necessary, and secure them firmly on one side, for the roof, letting it project over the sides. The other side should be attached to the ridge, or peak of the roof, by iron or leather hinges, in order to permit it to be lifted up to pour in the seed.

The hopper is now ready for use. You pour in half a bushel or more of seed; as the fowls eat it out, it continues to descend, and is prevented from escaping by the narrow slip of board at the bottom, and the roof prevents it from being injured by the weather. I think there would be an advantage gained by continuing the roof over so far as to shelter the fowls themselves from the rain while feeding.

If this apparatus is left unprotected in a barnyard, the cattle will be likely to overturn it to get at the seed. It may be neces-

sary, therefore, to drive down a stake at each end, and secure it by spikes to the hopper ; but a better plan would be to place it in a separate enclosure, made with posts and rails, in one corner of the yard. This need not exceed ten feet square, and it may be used, likewise, to receive other contrivances for their wants.

Although it may appear, at first sight, extravagant to feed fowls in this way, yet any one who chooses may satisfy himself, by direct experiments, that, after the fowls are in good order, they actually eat less than by any other method that has been devised.

We come now to the consideration of *water*, which should be plentifully supplied, and of the best quality. Many persons think, because they see fowls helping themselves to dirty water, and that from the stagnant pools in a barnyard, that the quality of the water is a matter of indifference to them. This is, however, far from being the case ; fowls actually do prefer and thrive best on the purest water. From the well-known injurious effects of salt, there is great

reason to suspect that many of the obscure and unknown diseases of poultry may be attributed to the saline ingredients contained in the water of a dung-heap. They do not partake of this water unless they have no other; and when there is no watering-trough, it must be brought to them, and the vessel kept constantly full. I have lately adopted a contrivance which I have seen recommended in an agricultural paper, and during the summer I find it to work very well.

Take a perfectly air-tight barrel, such as has been used for cider or wine, and set it up on end on any suitable platform, or a three-legged stool, about two feet and a half from the ground. A small hole is bored in the bottom just large enough to admit a small wooden or leaden tube; even a long pipestem might be employed for this purpose. The tube should ascend three or four inches through the bottom, in order to prevent its upper aperture from being choked up by any substances accidentally introduced with the water. The tube descends into any shallow basin or bowl, or trough of

wood, earthen, or iron ware. At the top of the barrel there is a hole to pour in the water, and it should be large enough to admit a funnel. The lower opening should be closed while filling, and when filled the upper opening should be carefully closed. Then withdraw the plug from the tube, and the water will gradually trickle down, and last as a reservoir for many weeks. This water-tank can only be used in summer; it would probably burst asunder in a severe frost. The same contrivance on a smaller scale may be found more economical, and quite as useful. It will last more than a fortnight. Take a common glass demijohn, and, having stripped off the wicker covering, fill it with water. Let this be suspended on a suitable frame, with its mouth downward and immersed in a basin of water beneath. To prevent the fowls from scratching up the dirt around it and soiling the water, the basin or trough should rest on a platform of boards. The object in taking off the wicker covering is to enable us to ascertain when the water is nearly exhausted.

We have now the needful apparatus for keeping them constantly supplied with food and water. There are, however, other substances which are almost as essential for their comfort and vigorous health. The first of these is lime. This may be either pounded oyster or clam shells, of which they are very fond ; or, if these cannot be obtained, refuse slacked lime, or old mortar. Of all the substitutes for lime, oyster-shells are the best and most preferred by poultry, as they contain, in addition, the most animal matter. In a poultry-yard of a hundred fowls, it will be found that they will consume daily, if properly broken, the shells of ten or twelve moderately-sized oysters. Coarse gravel is also much required, and fine sand, and when this latter cannot be procured, finely-sifted ashes. It has a neat and tidy appearance to keep all these articles in separate boxes about two feet square, and I have found it advantageous to place them together with the feeding-hopper and the water-tank, and a few secret nests, to be hereafter described, in the

small separate enclosure above mentioned within the barnyard.

We have now a suitable enclosure, with all the requisite conveniences; but we have farther to provide for them a shelter at night, and to protect them from the inclemency of the weather, and the attacks of noxious vermin; this, however, will form the subject of a separate chapter.

CHAPTER IV.

Hen-house.—Various Plans.—Situation.—Arrangement of the Perches.—Productiveness in Manure.—Laying Apartment.—Nests.—Nest Eggs.—Not always essential.—Time for gathering Eggs.—Secret Nests.—Noxious Vermin.

THE poultry-house, or, as it is more commonly called, the hen-house, although of paramount importance, is in this country too frequently neglected. In a climate like ours it is absolutely necessary, and, where the means permit, it should be filled in with brick, or at least lathed and plastered. In

Europe, where considerable sums of money are expended on similar objects, the accommodations for poultry are on a large, and even magnificent scale. That of Lord Penrhyn, at Winnington, England, is supposed to be the most costly and extravagant ever built. It presents a front of one hundred and forty feet, with a yard in front, first paved with brick, and then neatly covered with slate and painted ; it has, moreover, an extensive park covered with grass for the fowls to range in, houses for the attendants, granaries, &c. Such an expenditure would be deemed unwarrantable here ; but if we attempt to raise poultry on a large scale, we must have a hen-house roomy enough for the fowls, with a separate chamber for laying, and a smaller apartment for grain-bins.

Whatever may be the size of the building, it should be in a warm place, with a large window (carefully protected by slats within) looking towards the south. It has been recommended to place the hen-house partly under ground, in order to secure a

greater degree of warmth. This is a good plan, but it is liable to some objections. It is more accessible to vermin, such as skunks, minks, and weasels; it is, I think, rather more favourable to the increase of lice on the fowls, and, on account of the increased difficulty of cleaning it out, is liable to be neglected. I have, at least, observed this latter circumstance in several buildings thus constructed, although it must be acknowledged that this is not an objection to the plan itself.

The hen-house should, of course, be connected with the yard, and the entrance must be by a small opening just large enough to admit a fowl. In districts where foxes, minks, and other noxious animals are numerous, it is well to have this opening a few feet from the ground, with a small projection upon which the fowls can alight. It should also be furnished with a small slide, to shut them up when it is necessary to catch or examine them. I have seen the upper part of a cow-stable converted into a fowl-house, where a want of means has pre-

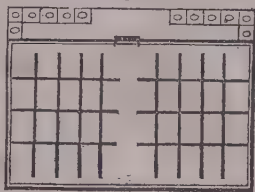
vented a farmer from erecting a suitable building. A slight floor of boards is constructed about two feet from the ceiling, with roosts a few inches above it. It is, however, a dirty plan, and only to be adopted when one is unable to do otherwise.

A hen-house for one hundred to a hundred and fifty fowls need not exceed ten by sixteen feet, and about ten feet high from the sills. It is recommended by some to plank the floor, while others prefer a sort of grating in its stead, in order to allow the droppings to pass through, and thus keep the house cleaner, but I think it unnecessarily troublesome and expensive. The floor should be of earth, which is to be frequently renewed and taken away. A load of sawdust or old tan should lie near the door: from this a few shovelfuls are occasionally thrown in; by attention to this, two or three cart-loads of the very richest manure may be obtained, and no inconsiderable part of the expense be defrayed.

This house is to be divided unequally into two parts, by any rough partition, with a

door of lattice-work between them. The largest, designed for roosting, need not exceed fifteen feet, and the smaller one five feet, in a house of the larger size. The poles for roosting rest horizontally on three narrow strips of plank which descend from the upper corners of the house to the ground, about the centre of the floor. Three similar strips, furnished with roosting-poles or perches, descend from the opposite upper corner nearly to the middle of the floor. This arrangement leaves a free passage to the smaller room, as will appear by the annexed figure. Some persons have these strips of plank attached above by leather hinges, so that they may be lifted up and kept out of the way when it becomes necessary to clean out the building, but in this plan they are not essential. The roosting-perches may be made of inch plank, about two inches wide, with the edges rounded off; they may be about

Fig. 2.



twelve inches apart. There is a prevalent idea that these perches should be of sassafras wood, but I should much rather trust to whitewashing the perches and the whole interior two or three times a year. I had originally constructed the roosting-perches on a row of strips of plank descending from one side of the building to the other, after a plan described in the books; but I found them so inconvenient that I at length adopted the above, and am well satisfied with the alteration. It would be a great improvement to arrange the perches or roosting-poles in such a way that they may be withdrawn, and others substituted, when they can be purified by submersion in water for some days. The best mode of doing this will, of course, suggest itself to the intelligent farmer. It may be effected by a dovetail into the plank strips, or by iron pins or screws, or slight wire hooks.

When a house is built in the ordinary way, that is to say, a mere shell of boards, it may be rendered more comfortable in winter by stuffing straw behind battens,

which are nailed against the sides. This should, however, be removed in the spring. It is a practice with some to shut the fowls out of the house entirely for two or three weeks during the warmest weather, and take advantage of that time to clean it out thoroughly and renew the earth on the floor. The disadvantages are, that it gets the fowls into bad habits, such as roosting in the stable among the horses, which should never be permitted; indeed, there is a general impression that hogs become sickly and pine away in consequence of eating the dung of fowls, which is dropped in their pen.

We come now to the consideration of the other apartment, which is designed for the nests. This is but five feet wide, or just wide enough to have two rows of nests all round, and to permit a person to enter and examine the nests. The upper tier is sheltered by a steep shed, to hinder the fowls from roosting on it. The nests should be a foot square, and well separated from each other; they should be filled with short-cut oat-straw, which may be renewed two or

three times during the year. To economize room, it is often recommended to place the nests in the same chamber in which the fowls roost. This is, I think, a bad practice. The sitting hens, under the best and most careful management, become lousy in such situations, and they are more liable to be disturbed by other fowls either laying to them, or, by insisting upon sitting in the same place, either disturb or drive them from the nest. The plan just stated obviates all these inconveniences.

It is usual to leave a nest egg, in order, as is supposed, to induce or to direct the hens where to lay. For this purpose one egg is usually left in the nest; but as this is liable to burst in cold weather, an old or addled egg is selected; but even this, sooner or later, becomes broken, and leaves the nest in so filthy a condition, that it is long before the disgusting smell can be removed, or the hen be induced to lay there again. To remedy this inconvenience, some put in its place a piece of chalk, the size and shape of an egg; this, however, does not last long,

for the hens soon pick it to pieces. The best substitute is a piece of wood turned to the proper size and shape, and painted white: these may be procured of any turner for about two cents apiece. In France, it is usual to employ artificial eggs, of pottery, or baked earth glazed, and these are undoubtedly the best that can be employed. Those living in the vicinity of a brickyard or pottery may obtain them upon easy terms.

After all, it is very doubtful whether any nest egg is necessary, or even desirable. Where rats are troublesome, it offers too tempting a bait to leave a real egg; and unless a hen has selected a very suitable and safe situation, where a nest egg might induce her to return to the same spot; and where she would finally hatch, I am not sure that it is worth while to leave a nest egg. One of my neighbours, who keeps a yard of more than a hundred fowls, uses no nest egg whatsoever, and is very certain that there is no difference in the quantity of eggs annually collected.

There is said to be reason even in roast-

ing eggs: how far this may be true, I know not, but some judgment is undoubtedly to be exercised in gathering them. If they are sought after in a noisy and boisterous manner, and at irregular periods, the fowls are unnecessarily frightened, fly off, and not unfrequently break the egg, perhaps just ready to be excluded, which sometimes produces a fatal disease. The best time for gathering eggs must be regulated by the season. In summer, they should be gathered early in the morning, and in winter, just before the fowls go to roost. Where noxious vermin abound, it is the better practice to collect them at all seasons in the afternoon.

We have elsewhere stated the proper size of nests, which should be a foot square, and about six inches deep. Instead of fixed nests, Cobbett recommends small shallow baskets, which can be taken down frequently and washed. They may be placed, he says, against the sides of the house, upon pieces of wood nailed up for that purpose. I should apprehend some difficulty in retaining them securely in their position, and

would, upon the whole, prefer fixed nests ; which should, however, be frequently white-washed, and the hay or straw removed every two or three weeks.

An ingenious plan for fixed nests has lately been contrived in Connecticut, which I have tried with complete success. Hens are well known to be anxious to deposit their eggs in secluded places. *The secret nests* here alluded to are well adapted to satisfy this propensity. They are made thus : Place a platform of boards, two feet wide, and say ten feet long (though it may be made of any length), against a building or a close board fence, about three feet from the ground. Along the outer edge of this platform nail a board lengthwise and upright, about twelve inches high ; leave a space open in the middle and at each end eight or nine inches wide, and divide the

Fig. 3.

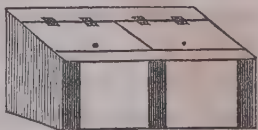


Fig. 4.



remaining space inside into nests a foot square ; this leaves a passage-way nearly a foot wide behind the nests. The top must slope from the wall, and open partly or entirely with hinges. These nests are easily examined, and give the fowls all the secrecy they seem to require. Fig. 3 shows the appearance of this series of nests when closed. Fig. 4 exhibits a view of the interior arrangement.

One of the greatest pests to a poultry-yard are noxious vermin, and in some districts they interpose serious obstacles to the rearing of chickens. These are *foxes, rackoons, rats, skunks, weasels, minks, muskrats, and cats*. They vary so much in their different degrees of cunning, that the same preventive will not apply to all, nor are the same means equally successful. There is also another difficulty. The snares employed against the enemy may recoil upon ourselves ; and of this I remember a very recent example. One of my neighbours, Mr. E. B., who was much annoyed by rackoons, set two steel traps, and upon visiting his

poultry-yard in the morning, found two of his best sitting hens dead in the traps.

When a *rackoon* (*Procyon Lotor*) enters a yard, wo betide its unlucky inhabitants. He sometimes puts to death fifteen or twenty fowls, without eating any part of them except the heads or the blood, which is sucked from the neck. A steel trap, baited with the heads of fowls, and placed outside of the poultry-yard, is the surest mode of capturing these animals.

When *foxes* are troublesome in a neighbourhood, they may be reduced in number by joining with your neighbours in hunting them to their burrows, when the snow is on the ground. They are not to be taken by ordinary traps, and the only mode I can suggest, and which I have known to succeed, is the *Kinderhook bait*. This consists of a piece of tainted meat, suspended by an iron chain a few feet from the ground. In this meat are concealed a number of small but strong hooks, attached by wire to the main iron chain. When poultry are permitted to wander about, and foxes are

troublesome, it is recommended to rub a small quantity of tar and sulphur about the head and neck. This is particularly necessary in the case of geese, for whom foxes have had, from the earliest antiquity, a remarkable predilection.

Weasels are often very destructive, although, at the same time, they rid us equally of another enemy, the common rat. I have found nothing better than the oblong iron cage used for rats, with a spring-door at each end, and baited with a piece of freshly-fried meat, or the head of a fowl. The nature of this enemy may be detected by finding your fowls dead, and the only external injury apparent is an open wound in their throats.

Minks only occur near streams and ponds. The best mode of getting rid of these is to place a number of steel traps, baited with meat, and carefully rubbed over with any aromatic essential oil.

I have known the following to be very successful against *skunks* ; but it should be borne in mind, that the traps must be laid

down late at night, and removed at early daylight. No bait is necessary. In a place where these animals have been known to visit, put one or more eggs on the ground, and in a small circle around it lay down half a dozen steel traps, fastened together. The skunk is a stupid animal, and in its endeavours to reach the egg walks over the traps, and is thus easily captured.

Muskrats are not often very injurious, but it is sometimes necessary to get rid of them. This is done by ascertaining the mouths of their burrows, which are always beneath the surface of the water. Place opposite to this a long square box, open at each end; the open ends are furnished with sharp-pointed wires directed inward, and just large enough to permit the animal to squeeze through. Two, and occasionally three, are taken at a time in this way.

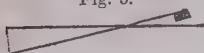
Cats are to be summarily disposed of whenever they are caught in the act of destroying eggs.

Rats are great egg destroyers, and require our greatest precautions to guard

against. Unfortunately, too, we cannot get rid of them by poison without the hazard of destroying our poultry also. Loudon, in his *Encyclopædia of Agriculture*, has furnished the description of a very complete, but, at the same time, a rather complex apparatus, which may be worthy of trial.

It consists of a long square box, closed at one end. Against the other is heaped a quantity of brushwood, sufficiently open to permit rats to enter. At the closed end is placed a quantity of grain, and this end is also rubbed with anise, rhodium, pepper-mint, or any other odoriferous oil. In this state it must remain for several days, frequently renewing the bait, until their habitual

Fig. 5.



passage along this box has been firmly established. On the bottom of this box there is a trap-door, as seen in figure 5, which has hitherto been fastened by a pin. This trap, which may be made of tin towards the tip, is balanced by a weight, which, when the rat has fallen through, restores it to its former position. The rat falls into an empty

barrel, from which a long tube leads, ending in another trap-fall, from which he is tumbled into a tub of water and drowned.

A more simple mode has lately been advertised in the newspapers, and which, it is stated, has been very successful. Take any water-tight vessel, and fill it partly with water; pour on this bran nearly to the top, and, simple as it appears, more than a dozen rats have been caught by it in one night. It need hardly be mentioned, that it should be put in some place to which the fowls have no access.

Arsenic is frequently employed, but is exceedingly dangerous. An equally good poison is the powder of *nux vomica*, mixed up with Indian meal, and scented with oil of rhodium, of which rats are peculiarly fond.

In some districts *birds of prey*, such as hawks and owls, are very destructive to young chickens. Where fowls are suffered to roam about, crows will seize young chickens upon every occasion. This danger is much diminished where guinea fowls are

kept, as their ceaseless and piercing cackle frightens these birds away. A toy wind-mill, with a clapper attached to it, such as is used in corn-fields, will be found to be useful in a poultry-yard when chickens are numerous.

Against reptiles I know of no means of guarding, except by having the lower part of the enclosure around the poultry-yard close. The snapping turtle will frequently seize young ducks and goslings, and drag them under water, and the black-snake will occasionally make a dash into the yard. This latter, however, is very rarely the case.

CHAPTER V.

The Egg.—Its Composition.—Anatomy.—Monstrous Deviations in Form, Size, and Weight.—Distinction of the future Germe.—Quantity.—Season of Laying.—Uses and Value of Eggs.—Mode of Preservation.—Unimpregnated Eggs best for that Purpose.

THE specific gravity of a new-laid egg at first rather exceeds that of water, or, in other words, sinks in water; but, by the evaporation from it through the shell, it soon becomes lighter. The mean weight of a hen's egg is 875 grains; of which,

The shell and inner membrane weigh	93.7
The white - - - - -	529.8
The yolk - - - - -	251.5

The *shell and the membrane* are composed almost entirely of lime, with a little magnesia and animal matter. More accurately, it is composed, in a hundred parts,

Of carbonate of lime - - - -	89.0
“ of magnesia - - - -	00.6
Phosphate of lime - - - -	4.8
“ of magnesia - - - -	0.9
Animal matter - - - -	4.7

It is perforated with numerous pores, through which the air passes during incubation. It is sometimes entirely wanting, which is generally attributed to the fact that the fowl has had no access to lime before laying. The shell, however, is known to be the last part formed, and this with great rapidity, while in the oviduct. It is probable, therefore, that those eggs without a shell result from the ardent desire to lay—a desire which does not permit the egg to remain twenty hours, or long enough in the oviduct to receive its hard shell. The French poulterers attribute this want of a calcareous covering, or shell, to the excessive fatness of the fowl, and recommend to diminish the quantity of food, and give chalk in the water, and pounded bricks mixed with its food. On the inner surface of this hard shell we notice a firm white membrane, termed the skin; at the larger end this forms a cavity, filled with air, and which enlarges during incubation. The *glair*e, or *white*, is divisible into two portions, or layers, each surrounded by its pe-

cular and delicate membrane; the outer layer is the most fluid and transparent. It is chiefly composed of albumen, with a small portion of sulphur. The presence of sulphur is indicated by the tarnish which it gives to silver spoons. The *yolk* occupies the centre of the egg, and is enveloped also in its peculiar membrane, called the yolk-bag. Besides albumen, the yolk contains oil and phosphorus. This oil was formerly much sought after, and employed by the chemists of Europe for what they termed *killing* mercury. It is obtained by boiling the yolks, and then submitting them to pressure; in this way about five ounces of oil are obtained from fifty eggs. From each end of the yolk proceeds a white, knotty body, terminating in the glaire by white, flocculent extremities; these are termed *chalazæ*, or *cords*. A round, milk-white spot, called the *treddle*, and surrounded with concentric circles, termed in the books *halones*, is only observed in such eggs as have been impregnated.

The shape and size of a hen's egg are too

well known to need description. It is, however, subject to great variations in form, size, and weight; and when these are unusual, they are termed monstrosities. They are sometimes pointed at both ends, or perfectly round, or even cylindrical. Some years ago I saw a hen's egg in one of the museums in New-York that was of the figure of a kidney-bean, with one of its ends much elongated. I found last year, in one of my nests, an egg of an exceedingly irregular figure. It was about two inches long; the upper end was drawn out into a fine, spiral twist, and must have received its shape during some accidental delay in its passage through the oviduct. The *size* of the egg is also subject to great variations, from that of a quarter of an ounce to three, and even four ounces; but the average weight is nearly what we have stated above.

Pullets, when they first commence laying, drop eggs not larger than those of a common quail, and I have seen them not larger than a sparrow's egg. It is a popular belief that such, also, are dropped when the

laying is out, as the farmers term it. This we believe to be an error, derived from the appearances presented when a laying hen is opened ; those nearest the vent being largest, and the more distant and less developed being smallest. It is admitted, we believe, by all, that not only the size, but the flavour of an egg, is much improved by a plentiful supply of the best food.

There is another monstrosity connected with eggs. We allude to the double-yolked, or twin egg. These may generally be detected by their unusual size, and the appearance of a ridge, or elevated seam, on the surface of the shell. From some inexplicable cause, these double-yolked, or twin-eggs, are sometimes found to be very common in a poultry-yard. In the Cabinet of Natural History and American Rural Sports is an account of a hen, belonging to a Mr. W. Seely, of Cumberland county, New-Jersey, which produced regularly nothing but double-yolked eggs, as large as those of a turkey. These should, of course, be re-

jected, when we are about selecting eggs to place under a hen.

The *centennum ovum*, or cock's egg, as it is called, without any yolk, I have never seen, nor do I believe in its existence, for the obvious reason that no egg can, by possibility, be formed without a yolk. In the very smallest egg laid by a pullet, the germe of the yolk can be detected. The Latin name is derived from the absurd belief that it is the hundredth or last egg that the hen can lay. There is another malformation in the egg, which has led to the belief that snakes or worms are contained in them. Dissection of these eggs has proved that the supposed snakes or worms are nothing more nor less than an unusual development of the *chalazæ*, or cords, which we have before described. The last monstrosity we shall advert to is the egg with a double shell; but this is exceedingly rare.

Some judgment of the sex of the future chick has been attempted to be drawn from the shape of the egg; and from the time of Aristotle to the present day, it is sup-

posed to be firmly established, and is implicitly believed, that a sharp-pointed egg contains the male, and the rounded the female germe. By this rule it would be difficult to say what would be the sex from a regularly rounded egg, or from one pointed at both ends. Among all polygamous birds, like our domestic fowl, it is quite obvious that there must be more females than males, and yet, by the above rule, the males must predominate. A better test is to examine the egg by candlelight, about the third day after incubation; a small vacancy is observed underneath the shell, at one end; if this is exactly at the point, it is supposed to contain a male germe; if on one side, it is a female.

The *number of eggs* annually produced varies with the climate, breed, and the attention paid to the hens. Buffon asserts that a hen, under favourable circumstances, will lay one hundred and fifty eggs in a year, besides bringing up two broods of chickens; but this appears to be an over-estimate for this climate. He states that "it

is said that at Malacca and other places hens lay twice a day ;” and we see it stated in some of the poultry books, that one particular breed will lay an egg every day in the year. A poultry-yard stocked with only forty of these miraculous fowls would, of course, furnish the very extravagant number of 14,600 eggs in the course of a year.

But leaving these old wives fables, we shall record several statements from American practical writers, which may enable us to form some judgment on this matter. It should be remembered, however, that all these have been recorded, because they were thought to be extraordinary products, and therefore the average number, under ordinary circumstances, must be considerably smaller.

No. 1. A yard of forty hens, mostly pullets, and three cocks, yielded in ninety days, between January and May, 1440 eggs.—*Cultivator*, 1842, p. 117.

No. 2. Another, containing 60 hens, yielded in 160 days, between February and August, 2655 eggs. It is worthy of remark, that

the same fowls the previous year, but not so well provided for, yielded only 1000 eggs.—*Cultivator*, 1841, p. 69.

No. 3. Another, of 83 hens, gave in one year 7200 eggs. The expenses were \$56 43, the receipts \$123 33, leaving a balance of \$66 90.—*Ib.*, 1840.

No. 4. One who writes more in detail, states, that when his fowls commenced laying, he had 37 hens and 3 cocks, and when they ceased laying, he had 26, the average being 32. In about 300 days, between January and November, they yielded 3,298 eggs. He raised no chickens.—*Ib.*, 1843, p. 22.

No. 5. Eight hens at Chelsea, Mass., yielded between July and August, in 49 days, 293 eggs.—*Ib.*, 1840, p. 164.

No. 6. The most remarkable case of fecundity is that furnished by Mr. Mount, in the same journal. He had three pullets of the Poland or top-knot breed, which had been hatched in June. They began to lay December 15 of the same year, and from that time to December following, laid 524

eggs, and only one exhibited any desire to sit. During this period they consumed three bushels of barley, 17 lbs. of rice, and a quantity of barley-meal and pease, the whole not exceeding \$3 71.

An examination of these statements naturally furnishes us with the following conclusions :

First. That the best season for laying is during the warm months.

Second. That when food is amply furnished, the yield of eggs is more than doubled.

Third. That a great diversity exists between the maximum and minimum number of eggs annually produced. It will be found to vary from 50 to 175 annually.

Fourth. It would appear from No. 3, that the profits from eggs exceeded one hundred per cent.

Fifth. With a particular breed, and by exercising attention in preventing hens from sitting, the maximum quantity of eggs may be obtained.

Sixth. In one of the statements given

above of profit, No. 3, each hen gave only 86 eggs in the course of the year, whereas, had the best breed been selected, the profits would have exceeded 100 per cent.

Seventh. It certainly appears proved that, to obtain the largest number of eggs, the top-knot is the best that can be employed.

The pullet begins to lay at from six to eight months after leaving the shell. They usually commence in winter, or early in the spring. In this latitude, the season of laying commences some time in February. It is usually said that early pullets will begin to lay in November, and continue to lay during the whole winter. This does not accord with my experience. Early chickens will, indeed, begin to lay as soon as above stated, but they cease with the first cold weather, and do not begin again until late in the spring; whereas late chickens will begin in January, and continue to lay without interruption. I am at a loss to account for this difference, but we are all familiar with the effect of a sudden sharp winter day upon a poultry-yard. Not an

egg, or at most but very few, can be obtained, and the impression of this *cold snap*, as it is called, remains for some days afterward.

The combined effects of cold weather and moulting render the winter months the least productive of the whole year. They may, however, be induced to lay during the coldest weather, by keeping them shut up in a warm and well-lighted room. But even this is not certain, unless the apartment be, indeed, quite warm, and the food regularly and abundantly supplied. One of my neighbours, who said that he had tried the experiment, complained to me of his want of success. The reason of his failure was apparent when I examined his cold and dark poultry-house. In the Continental poultry-books, it is stated that fowls lay every day except towards the end of autumn, and during the winter. By shutting them up and giving them abundance of food and water, they may be made to lay all winter, *but they become absolutely steril in the spring.*

When laying has once commenced, it goes on with considerable regularity, although fowls vary in this respect. Some lay one egg in three days, more commonly one every other day, others every day, and others, again, but this is very rare, two eggs in one day. This, however, I have never myself seen. In general, pullets lay more eggs than hens of the second year, and at the end of the fourth year they for the most part cease to lay altogether. After laying from twenty to thirty eggs, she ceases, or, in popular language, her *laying is out*: she shows an inclination to sit. If she is prevented from doing this, she commences, after an interval of a few days, to lay again; and thus it goes on, with one or more interruptions of a similar kind, till moulting commences, when laying ceases altogether.

Various cruel and unmeaning practices have been resorted to in order to break up a hen from sitting; we shall not mention them here, lest the unthinking might be induced to repeat them. Should the hen be prevented from sitting one night over the

eggs, it is comparatively easy to break her up; but if she has covered them longer, it becomes more difficult. It is generally sufficient to place the hen in a coop, with plenty of food and water before her. When the peculiar ruffled appearance and the cluck which accompany the desire to sit go off, which usually happens in about a week, she may be set at liberty.

The uses of eggs are well known in medicine, in the arts, and especially in cookery. They form one of the four great ingredients which, by a slight change in their proportions, constitute the bulk of our cakes and confectionary. They are easily digested, and highly nutritious. Even when hard-boiled, they are (contrary to the general belief), as appears from the experiments of Beaumont, as digestible as in any other form.

To keep eggs for any length of time, it is only necessary that they should be preserved in a cool place, and not allowed to transpire. This is best done by smearing them with lard or oil, and packing them in salt.

They should be arranged on their smallest ends, otherwise the yolk will adhere to the sides. In this way they may be kept for several months. I am informed that eggs formed without the presence of a cock may be set upon three or four weeks without producing the slightest change, being as sweet and palatable as when first laid. This may afford a useful hint to those who wish to put up eggs for long sea-voyages.

In 1820, a tradesman of Paris asked permission of the prefect of police to sell in the market eggs that had been preserved a year in a composition, of which he kept the secret. More than 30,000 of these eggs were sold in the open market without any complaint being made, or any notice taken of them, when the board of health thought proper to examine them. They were found to be perfectly fresh, and could only be distinguished from others by a pulverulent stratum of carbonate of lime on the shell. It was discovered that they had been preserved in highly-saturated lime-water. Common sea-water has also been suggested for

the same purpose, but I do not know with what success.

In some parts of the South of Europe eggs are preserved by dipping them for twenty seconds in boiling water, and then keeping them well dried in finely-sifted ashes. This, however, gives them a grayish green colour.

By the lime-water process, eggs have been kept perfectly sweet for two years.

CHAPTER VI.

Incubation.—Anatomical Changes in the Egg during that Period.—Artificial Hatching.—Chinese.—Egyptian Method.—French.—The Eccalebeion.—More curious than useful.—End of Incubation.

WHEN a certain number of eggs has been laid, the hen shows an inclination to sit. This appears to be a blind instinct, for she will sit upon one egg or twenty, upon a piece of chalk, or a stone; and if fresh eggs are supplied, she will sit for six weeks.

During this period she will not leave her nest for more than a few minutes at a time, and at intervals of from one to three days. So powerful is this instinct, that they have been known to remain on their nests until they have perished with hunger. To prevent such an occurrence, it has been recommended to feed them daily in this situation; but, in the attempt which I made, they soon began to lay in their nests, and shortly afterward deserted them. The better plan seems to be to let them follow the dictates of their own instinct, and when they desire food, let them seek for it in the poultry-yard.

At this season, too, her whole nature is changed. From being peaceful and cowardly, she becomes a noisy termagant, fighting with all her female friends, and avoiding chanticleer as her most dreaded foe. Her notes change to a peculiar cluck, which lasts until her young brood can shift for themselves.

In the selection of eggs for hatching, we should choose those of the average size and ordinary form, avoiding those with a double

yolk or unusual form, and taking care to select the freshest eggs, and those which have not been much shaken. If you wish for dark-coloured chickens, you have only to select those eggs which have a light, reddish-brown hue.

Pullets, or even young hens, should not be intrusted with a nest of eggs; it is better to employ older ones, who sit more closely, and are better calculated to take charge of a brood. The number of eggs to be placed under a fowl varies from thirteen to nineteen, according to the size of the hen.

The period of hatching, or *incubation*, as it is called, lasts twenty-one days; and during that period, the following changes take place in the egg:

A small, shining spot, of an elongated form, with rounded extremities, but narrowest in the middle, is perceived at the end of the first day, not in, nor upon the *cicatricula*, but very near that part of the yolk-bag. This may be said to appear beforehand, as the abode of the chick which is to follow. The yolk augments in quantity, at the ex-

pense of the white, the fluid part of which it absorbs. No trace of the chick can be discerned before the beginning of the second day, when it has an incurvated form, resembling a gelatinous body, with large extremities, very closely surrounded by the *amnion*, which at first can hardly be distinguished from it. About this time the *halones* enlarge their circles; but they afterward disappear entirely, as well as the *cicatrices*.

The first appearance of red blood is discerned on the surface of the yolk-bag, towards the end of the second day. A series of points is observed, which form grooves, and these, closing, constitute vessels, the trunk of which becomes connected with the chick. This is called the vascular surface, and is bounded by what is called the terminal vein. The trunk of all the veins joins the *venæ portæ*, while the arteries, which ramify on the yolk-bag, arise from the mesenteric artery of the chick.

At the commencement of the third day the newly-formed heart is discerned by

means of its triple pulsation, and constitutes a triple or threefold *punctum saliens*. Some parts of the chick are destined to undergo successive alterations in their form, and this holds good of the heart in particular. In its first formation it resembles a tortuous canal, and consists of three dilatations, lying close together, and arranged in a triangle. One of these, which is properly the right, is then the common auricle; the other is the common ventricle, but afterward the left; and the third is the dilated part of the *aorta*, or main bloodvessel of the body. About the same time, the spine, which was originally extended in a straight line, becomes curved, and the joints may be easily seen. The eyes may be distinguished, looking black and large.

From the fourth day, when the stomach, intestines, and liver are visible, a membrane, full of bloodvessels (*chorion*),* begins to form

* To the anatomist the appearance of this membrane is very interesting. On its surface we see bright red vessels, carrying blood with air to the chick, and dark, brownish-red vessels taking the carbonated blood away. It is, in fact, a temporary substitute for lungs. The yolk membrane is also connected, but in a two-

about the navel, and increases with such rapidity, that it covers nearly the whole inner surface of the shell during the latter half of

fold manner, with the chick : to the small intestines by a tube, and by bloodvessels with the mesenteric artery and the venæ portæ. During incubation, the yolk becomes thinner and paler, by the admission of the inner white. At the same time, numerous fringe-like vessels form on the inner surface of the yolk-bag ; they absorb the yolk, and convey it into the veins of the yolk-bag, giving nourishment to the chick. Thus, in the chick just hatched, there is only a remainder of the yolk and its bag to be found in the abdomen. These are completely removed in a few days, leaving only a trace of its former existence in a scar on the surface of the intestine.

It is the generally received opinion that the blood in the embryo chick is decarbonized by its contact with the oxygen of the atmosphere, and yet it would appear, from a series of experiments detailed in the Medical Reports of Guy's Hospital, London, that the natural development of the contained embryo goes forward, and is perfected, without the transmission of atmospheric air to arterialize the venous circulation.

The lining membrane of the shell, through which the air is supposed to pass before reaching the chorion, was observed to increase in density, and become apparently less permeable to air in a ratio corresponding to the extent of time during which the process of incubation had gone forward : a condition directly opposed to that which might have been expected to obtain, assuming the correctness of the above-mentioned theory of decarbonization. It then occurred to the author of these experiments that, in the cases in which it had been found that incubation did not go forward when a barrier was put to the supposed egress of atmospheric air, that a source of fallacy might have been present, in the employment of a substance to protect the shell, which, from its noxious qualities, had been fatal to the existence of the

incubation. This supplies the place of the lungs, and carries on the respiratory process instead. The lungs themselves, indeed, begin to be formed on the fifth day, but, of course, cannot perform their function while

contained embryo. To satisfy himself on this point, he repeated the experiment in question, in the following manner.

Having selected a number of fresh eggs, as nearly of the same size and form as possible, he varnished them over several times with albumen which had been allowed to stand for some time in an open vessel, until, by evaporation, it had acquired considerable consistence; this was repeated until the shells appeared completely lackered. Then, with a pencil, he marked one of them into equal sections like the divisions in an orange, and cut a piece of card to correspond exactly with one of these divisions; then a great number of papers similar to this card; and macerated them for two days in albumen, until they were thoroughly saturated, and so soft and pulpy that they could be readily applied to the egg, and the edges brought so well together, that the joining was scarcely observable. Having covered the eggs in this way and allowed them to dry, he repeated the papering and varnishing four times, taking care to bring the middle of each section opposite the joining in the previous coating. They were now covered with four thicknesses of paper, besides numerous coatings of albumen, first on the shell, and subsequently between each layer of paper, the whole forming a covering so thick and horny, that Mr. Town was convinced that it was entirely impermeable.

The eggs thus prepared were hatched in the usual manner; and to render the experiment doubly sure, they were repeated with success, although he employed several coatings of oil paint purposely prepared with the most noxious materials, as a test of the air-proof nature of the protection used in the first instance.

the chick is within the *amnion*. Motion commences on the sixth day ; ossification, or the commencement of bones, on the ninth ; and at the same time the marks of the elegant yellow vessels on the yolk-bag begin to appear.

On the fourteenth day the feathers begin to be seen, and if the chick is taken out of the egg it will now open its mouth, as if for air.

On the nineteenth day it is able to utter sounds, and on the twenty-first or second breaks the egg. This latter process is effected in a systematic manner. The chick lies in the shell, with its feet and tail towards the smaller end ; the head is bent down under the wing, with the bill projecting up on a level with the inner surface of the shell. When the chick is sufficiently developed, it forces its bill through it. At each successive stroke the body is turned partly round, so that a circle of fractures is formed ; but before this is completed, the shell usually gives way. The inner membrane is sometimes very thick, and the

chick deficient in strength, in which case assistance may become necessary.

Hens will sit in this climate twice, and more rarely three times during the summer. Such are indifferent layers, and the propensity to sit is so strong, that they will often lay two or three eggs after they have begun to sit. During incubation, it is advised to place sand and food near the hen, although, if your poultry-yard is complete, this will not be necessary.

Hatching by artificial means has been practised for many hundred years. It is a simple process, requiring only a steady heat of 96° of Fahrenheit, and was doubtless suggested by seeing eggs accidentally hatched under a dunghill. There are records that even the heat of the human body has been applied to that purpose.

In Egypt and China it has long been successfully practised on a large scale. In the former country it was for a long time confined to the priests, who kept their process a secret. On the revival of letters, it was introduced into Europe, but was probably

not found successful. Portuguese travellers had also brought to light the mode employed by the Chinese. This consisted in placing the eggs, on their larger end, in sand, over a stove. The French improved upon this, using a small portable oven, and laying the eggs on feathers. The heat was supplied by four lamps.

The Egyptian method is now well known, and a few words concerning it may not be out of place. The edifice is built of unburned bricks. It has a passage in the centre, with from three to eight rows of ovens on each side. Each oven is two stories high, the upper one communicating with those on each side, and with the lower, and the lower with those adjoining in the same way. There is an apartment beneath, where the live fuel (charcoal made from dung) is placed. There are other buildings around it, to contain fuel, eggs, chickens, and sleeping-places for the attendants. These are all built and kept in repair at the public expense. About the middle of January public notice is given to bring in the eggs. As

soon as enough are brought in to fill half the ovens the process is begun. The eggs are arranged three deep, on a bed of straw and light dust. The fuel is then lighted, and kept up for ten days. Having no thermometers to regulate the heat, they depend on their long experience, practised tact, and the frequent application of the egg against the eyelids. The eggs are turned and examined, and the addled and unfecundated eggs removed. At the end of ten days fresh eggs are placed in the vacant ovens; the old fires are put out, and fresh ones are lighted, so that they do not receive quite the same heat, but nearly as much, through the lateral holes in the ovens.

When hatched, the persons engaged in superintending the process return to the owners two chicks for every three sound eggs received; and this is their only compensation.

It is now that the real difficulty commences, and one which will always present insurmountable obstacles, except in countries situated like Upper Egypt. So free is this

climate from rains, that coloured drawings on stone, exposed to the open air, have remained unchanged for centuries.

The chickens from the ovens are kept, in Egypt, on the flat roofs of the houses, which are surrounded by low parapets. They are fed with pounded millet and rice, and at night are placed in cages, covered with cloth; at the end of a month they are turned adrift, to take care of themselves.

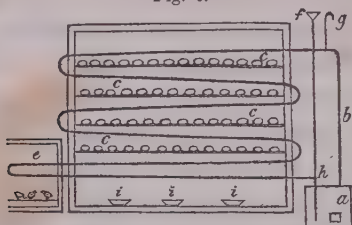
In France, *Reaumur*, who first brought the thermometer to its present degree of perfection, conceiving that he had, in that instrument, the means of regulating the temperature, made many experiments, and succeeded in raising chickens by means of dung in a state of fermentation, and by appropriate boxes over common ovens. *Champion* and *Bonnemain* still farther improved and simplified the process, by making use of tubes, with heated water.

Latterly, a machine with all these improvements, and under the name of *Eccalebeion*, has been introduced into England, where it has been in successful operation.

It occupies a small space, and turns out one hundred chickens a day.

To those who may not have access to the expensive works containing a complete description of the apparatus employed for hatching chickens by hot water, the accompanying figure and details may not be unacceptable.

Fig. 6.



The above figure will give a general idea of the apparatus. It consists of a square box of any required size. A small furnace is seen at *a* furnished with a boiler. From this arises a tube, *b*, which traverses backward and forward through the box, and through another one which is partly shown at *e*, where the chickens are kept after being hatched, and returns into the boiler, *a*. The eggs rest on the shelves, *c*.

Supposing the water heated in the boiler, it rises by its specific levity through the tube *b*, and more progressively through all the tubes to *h*, when it passes down to the bottom of the boiler. This circulating movement, once established, continues as long as the boiler is heated, because the temperature is never equal through all parts of the apparatus; and it is easy to conceive that a perfect equality of temperature can never exist, on account of the continual loss of heat which escapes from the outsides of all the tubes. It does not, however, become greatly diminished, even after having expended a large portion of its caloric on the outside of the box, in maintaining a gentle heat in the chicken-box, *e*, adjoining. The bent parts of the tubes outside of the box are covered with woollen cloth. By means of a regulator, a regular and constant temperature is obtained.

In practice, but one twentieth part of the eggs which the apparatus is capable of holding is put in at first, and the remainder in similar parts every successive day. In this

way, the eggs first placed in will, on the twenty-first day, be for the most part hatched, so that we may obtain every day nearly the same number of chickens.

During the first days of hatching, the small quantity of water contained within the substance of the egg evaporates through the pores of the shell. This is replaced by a small quantity of air, which is necessary to support the respiration of the chick ; but as the atmosphere within the box is nearly dry, so that the chick would either die, or suffer greatly for want of sufficient moisture, this is remedied by shallow vessels, *i, i, i*, containing water.

When the chickens are hatched, they are placed in the adjoining box, with a sheep-skin with the wool on suspended over them, and fed with pounded millet or rice.

In a practical point of view, I am disposed to consider the whole thing more curious than useful. All the machines hitherto invented fail in producing healthy chickens. In Egypt, so highly favoured by its almost perpetually unclouded sky, we have seen

that even there the after-care of the chicken requires the space of a month. In France three months are requisite, and I should think that the constantly humid climate of England would demand a still greater length of time. In some of our Southern and Western States it might, however, be worthy of trial.

When the chicks are about to be hatched, a little extra attention is necessary. The hen should be gently lifted up, and such chickens as have broken through their shell should be removed and placed in a basket, with a little tow or cotton in the bottom of it, and set near the fire, or in some other warm place. Some hens, especially pullets, are so impatient that at the first sound of the chick they will be restless and uneasy, and leave the nest often with a single chicken. Sometimes the chick adheres to the membrane of the shell, so as to require some assistance to separate it; this, however, must be done with great care. As the eggs are of various degrees of freshness when placed under the hen (although

this should always be avoided), it can scarcely be expected that all will come off at the same time. It is well, therefore, to wait until the next day, when such as are not decidedly addled may be placed under another hen which has nearly completed her term of incubation. We then take the hen from the nest, and, placing her in a suitable coop, put the chickens to her. The treatment of the mother with her brood will form the subject of the succeeding chapter.

CHAPTER VII.

First Food for Chickens.—Various Forms and Substitutes.—Forcing-frames.—Situation.—Clogs to prevent Scratching.—Food.—Artificial Food.—Return to the Poultry-yard.—Feeding-coop.

CHICKENS require no food for the first twenty-four hours, or until they have been restored to their mother. They should then be fed with coarsely-ground rice, or, what is still better, coarsely-ground Indian corn.

The first consideration, however, is a

suitable coop to restrain the mother, that she may not lose them in the wet grass, or exhaust their strength in her perpetual search after food. At the same time, by this confinement of the mother the chickens are restricted in their rambles within certain limits, which allow them sufficient exercise, and we are also enabled to give them this food at regular and stated periods.

Various simple contrivances have been employed for this purpose, such as an old tub turned bottom upward, or a basket or barrel laid on its side, with a few sticks driven into the ground in front. Some use sticks or poles 8 or 10 feet long, driven into the ground in a circle, with the tops tied together. Common empty boxes of any form, with laths nailed in front, are also employed.

In this climate, the best and most durable are those which are made by nailing boards two feet long together in such a way as to form a triangle about three feet deep, boarding up the back, and nailing laths in front, wide enough apart

Fig. 7.



to permit the chickens to run in and out. Some of these should have boarded bottoms, to be used according to the season ; but perhaps it would be better still to have a number of platforms always on hand, to be used as occasion may require. In wet seasons, or in early spring, these platforms should be always put under the coops, and should be large enough to project four or five inches in front.

It is a good plan to have a broad and short piece of board on which to place the food and water. In the ordinary mode of supplying chickens with water by means of small troughs, they are apt to get into the water, and become chilled and die. To obviate this, get two tin pans, or earthen saucers, such as hold flower pots, one somewhat smaller than the other. Place them within each other, and fill up the space between with water. To render this more accessible to the very young chickens, it may be well to sink the larger pan into the feeding-board, and nearly on a level with it. This board may be fitted with leather hinges, so as to

admit of its being raised up towards evening. This answers the double purpose of protecting the chicks against the smaller noxious vermin during the night, and of preventing them from wandering about in the dewy grass in the morning. I have seen chickens kept under old *forcing frames*, and think it an excellent plan. It has suggested the following idea, which it seems would be well adapted to our climate, and especially in the early spring.

Dig a trench in the poultry-yard, or in the garden, in some place not required for cultivation, of any convenient length, about three feet wide, and about the same depth. Drive in short stakes at each corner, and if the trench is long, intervening stakes, four or five feet apart. To these stakes nail strips of boards, of such a height that the north side will be about one foot above the ground, and the south side not more than a few inches, or level with it. Separate the trench into apartments by driving in closely sticks or slips of boards, which should reach the top. Over this trench throw any old

net during the daytime, and towards sunset any old frames or sashes, or even boards. To those who would desire a more expensive and neater arrangement, we would recommend regularly glazed sashes with hinges attached, and in place of the net, a frame of iron or brass wire, with the meshes a couple of inches a part.

The proper situation of these coops is a matter for consideration: they should be near the house, on account of the convenience of feeding them, and the less danger of the chicks being swept away by hawks or crows. The coops should not be placed near each other, as the chicks are apt to mix together, and a hen will frequently kill a strange chicken. They should be at least 50 feet apart. It is a practice with some farmers to place their chicken-coops in the garden. Here they not only obtain a great part of their livelihood, but are of great service in destroying multitudes of minute insects and their eggs, which are so injurious to vegetables. It has been objected to this practice, that the chickens ever after are

CLOGS.

reluctant to keep out of the garden. This may be prevented by clipping the wing. If the farmer is too lazy or too indifferent to keep up his poultry, but would prefer seeing them in his swill-tub, kitchen, or parlour, he must, at least, provide them with clogs. These consist of a round piece of stout side-leather about as large as a half dollar piece, with a round hole cut in the centre, just large enough to pass the foot through. Other modes have been practised, but they are needlessly cruel; such, for instance, as chopping off the toe nails, or tying the two outer toes over the middle one. The tight ligature produces not only great pain, but even mortification and death.

The *best food* for young chicks is dry broken Indian corn or rice, given three times a day. Corn-meal mixed with water into a paste is often given, but we think it has a tendency to produce gapes, or, at least, to favour their approach.

Where the chicks have no access to grass, it should be furnished them chopped fine, as well as small quantities of fresh meat.

FOOD FOR CHICKENS.

Chopped chives are also highly recommended. They should also be furnished with *earth worms*, chopped into fine pieces. The decided taste which chickens and fowls have for *insects*, *worms*, and *grubs*, has suggested in France a curious mode of multiplying them for use. A sort of paste is made with yeast, oats, and bran, mixed up with horsedung. This is placed in a proper vessel, and if the weather be warm, it will, at the end of three days, be filled with worms. Another method is practised on a large scale. In a square pit of suitable size, and lined either with wood or stone, are placed alternate layers of chopped straw, horse-dung, earth mixed with blood, pumice of apples, or grapes, intestines of animals, &c., until it is full. The worms generated are kept for cold weather.

At the end of a month or six weeks, the hen may be liberated. If the portable coop be employed, it may be propped up with a stick, and the hen allowed to return to it of her own accord, when it may be let down, and kept so until the dew of the morning is

dried off. At the end of a couple of weeks more, they may be turned into the poultry-yard.

Here they will at first hardly receive fair play in the distribution of food. It will therefore be necessary to prepare for them a *feeding-coop*, in order that they may enjoy food without being disturbed by the older fowls. The feeding-coop consists of a box about four feet square, and two feet high. One side of this is open, with laths or slats of wood just wide enough to admit the chickens, and yet so narrow as to exclude the grown fowls. The feed is thrown in through a small trap-door on the top.

CHAPTER VIII.

Various Substances used in fattening Chickens.—Confinement.
—Fattening-coop.—No Gravel.—Sugar and Molasses.—Indian Meal.—Animal Food.—Fish.—Objections to its Use.

VARIOUS modes of fattening chickens have been practised and recommended. In some parts of England, the food, consisting of

ground oats made into gruel, and mixed up with lard, pot-liquor, and milk, is literally crammed down their throats. This filthy and disgusting practice I hope will never be introduced among us.

There are one or two considerations which should always be attended to in the process of fattening. It must be done in the shortest possible time, in order to save time, labour, and expense. To effect this, the chickens should be kept quiet, and not allowed to annoy each other. This is done by having a long coop, divided by partitions into spaces just large enough each to hold a single chicken; the bottom should be of narrow laths or rounded sticks, in order to allow the droppings to escape, and the coop moved to a fresh spot every day or two. This coop should have a large and deep trough before it for the food, and a small partition in it for water. They should be fed regularly three times a day. These coops should be under cover, and, if possible, in some close chamber. With steamed potatoes alone, given in this way three or

four times a day, chickens have been fattened in eight to ten days. It has been, indeed, asserted that three pounds of meal alone will fatten a chick from the shell.

Mr. Wingate, of Maine, who has been very successful in his practice, fattens his fowls thus: He shuts them up where they can get no gravel. He keeps corn by them all the time; gives them meal, mixed up with water in the form of dough, and instead of water, gives them skimmed milk. They become fat in ten days. If they are kept longer than ten days they must have gravel, or they will fall away.

The attachment which fowls have for the swill-tub shows clearly what articles will be acceptable. Hence vegetables of any kind, and grease of any sort, are greedily devoured, and contribute greatly to fatten them. So of molasses, sugar, and sunflower seed. I do not believe that any one article is of itself best adapted to fatten, but should prefer to vary the articles daily. It is most economical to boil everything given to fatten, or even to feed them, and for the former

sweet milk is preferable (except on the score of economy) to sour.

I have been informed that some persons have succeeded in fattening fowls very expeditiously by giving nothing but hasty-pudding for a week or ten days. This is made, in our part of the country, by boiling Indian corn-meal over night, and when cold next morning, cut it into thin slices, and fry them in lard (any sort of refuse grease will, however, answer for this purpose). When given to the fowls, they are thickly powdered with any cheap brown sugar, or covered with molasses.

Charcoal is highly recommended, not that it fattens of itself, but it is thought to promote digestion.

Animal food is highly necessary, and, when given in small quantities, aids very much the process of fattening. If too much is given, it communicates a rank and disagreeable flavour. On the seashore, where farmers, for economy's sake, suffer their fowls to eat crabs and other shell-fish, their flesh is so highly tainted with them as to be

obvious not only to the taste, but to the smell. It may, however, be given to young chickens with advantage until it is time to place them in the fattening-coops, when the flavour will disappear with a change of food.

CHAPTER IX.

Caponization.—Its Origin.—The Instruments.—Operating-table.
—Precautions.—The Operation.—Change in its Habits.—Increased Size and Value.—Operation on the Female.


THE castration of fowls, as one of the means of producing a large and well-flavoured animal, has been practised by the Chinese from the remotest antiquity. It does not, however, seem to have been introduced into Europe until a comparatively recent period. Columella, who wrote professedly on rural affairs about 1800 years ago, gravely asserts that capons are made by cutting off the spurs, and searing them to the quick. This is scarcely inferior to the direction for performing the operation

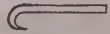
given in an agricultural magazine published in this country not more than five years ago. It runs thus: "Make an incision with a sharp knife under the lowest rib; with your fingers lay hold of the parts to be extirpated, and cut them away with sharp scissors; put a stitch or two in the wound!"


On the Continent this operation is performed with more success than in England. In France, hen capons, or, as they are called, *poulards*, are also frequently made. I am not familiar with this operation, but it is probably more simple than the corresponding operation upon the male. The French hen-housewife is said to introduce the finger into the vent, and to obliterate the ovaries by squeezing them against the back bone.


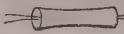
We are indebted to Mr. Bela Badger, of Philadelphia, for its successful introduction into this country; and this method is so clearly and minutely described in the *Cultivator* for 1842, that we shall make no apology for transcribing it, in all its details.


The instruments are six in number, and made of silver, steel, or brass.

1. A *knife*. Its shape and cutting edge are shown thus ; but a common scalpel or surgeon's knife will answer, or an exceedingly sharp and fine-tempered pen-knife.

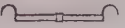
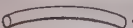
2. A *tenaculum*, six inches long, , gradually tapering, the reflected edge, as well as the tip, very sharp.

3. A pair of *forceps*, round, six inches long, , the fingers four inches, the points square, and perfectly tight.

4. *Tube*, three and a half inches long, smooth inside,  so as not to cut the hair as it is moved backward and forward through it. Two sides of the upper end are flattened, to enable it to be conveniently grasped by the thumb and fore finger. The lower end is indented, to prevent the testicle from turning, and also in order not to compress at once too closely the spermatic cord. This figure  shows the tube, with the horse hair looped and run through it.

5. The *elevator* is 6 inches long, , the bowl truncated and elongated, oval, per-

fectly smooth, the edge rounded. It is used to press out to view the lower testicle, to assist in passing the hair over the cord, to scoop out the blood, and to lift the lower testicle out after being discovered.

6. The *hooks* are an inch long, half an inch wide, the hooks or lips a quarter of an inch. They are fastened pendulous to a split reed, or bamboo, six inches long. One hook only is, however, fastened to both split ends of the reed. A ring runs over the reed, with a view of increasing the elasticity or expanding power, drawing farther apart the lips of the incision. The two figures give an idea of these, one straight, , the other bent, . Use, to draw apart the ribs after the intercostal muscle is separated, so as to enable you to get a fair view of the testicles.

The next thing is to prepare the *operating-table*, which may be of any convenient height, so as not to fatigue the operator. About four feet is the usual height, but we prefer it rather less. It should be on the top two feet long, and fourteen inches

broad. Make two holes in a direct line diagonally across the table, beginning six inches from the left hand corner, and about four or five inches from the margin. These holes should be six inches in the clear. Pass through these holes a leather strap three quarters of an inch wide, and twenty inches long, the two ends being fastened together. Below the table and through the strap run the *lever*, two feet long by one and a half wide, one end fastened by a movable joint to the opposite legs of the table. On this weights are fixed, in order to hold the subject firmly by the wings. An old axe makes a good weight, and may be fastened backward or forward on the lever, adjusting the weight to the size or strength of the fowl. This strap is passed over the wings, close to the body. Next, we nail on the right-hand end of the table, about four inches from the corner, an inch buckle attached to a short piece of leather, so as to elevate the buckle about half an inch above the surface of the table. Take a piece of leather suitable to



pass through the buckle, and punctured with numerous holes. To one end attach a small cord long enough to form a noose to slip over the legs, and then the strap is drawn through the buckle. This forms the extensor. With the strap across the wings, the lever in force, the noose around the legs and extended, the subject is now ready for the operation.

There is one general rule to be adopted in all cases, and without which it will be useless to operate. In every case the fowl must be shut up for thirty-six or forty-eight hours, without food or drink. The objects gained are twofold: the intestines are not so full, and, of course, will not interfere with the operation; secondly, the danger is not so great from the accompanying inflammation.

The Operation. — The parts to be cut through are the intercostal muscle, the internal costal muscle, and the peritoneum. Place the fowl on its left side on the table, with its back to the operator, the strap around the wings, and the noose around the legs. Pluck away the few feathers over the

space between the first and second ribs; with the left-hand thumb and finger draw the skin tense, ascertaining positively the space between the ribs. Then, with the knife in the right hand, make a single cut through the skin only, about an inch long, measuring from the point of the first rib backward. This exposes the two ribs and the margin of a large muscle running down the thigh. This muscle is in no danger of being injured if the proper point is ascertained where to make the incision; but if otherwise, an injury to it will cause lameness. Divide the muscle between the ribs by introducing the knife at the point of the first rib, and cutting backward about an inch. In this way the pleura is avoided, and, of course, an escape of air.

Introduce the hooks, which will, by the power of the reed, draw apart the ribs, and expose a bundle of muscular fibres, called the internal costal muscle. Should the incision be too small, it may be enlarged by passing the knife round the point of the second rib; this will divide the ligamentous

connexion between the two ribs. Divide the belly of the internal costal muscle lengthwise. This done, we come to a thin, delicate, semi-transparent membrane, which is the *peritoneum*; this must also be divided, taking care to cut as far from the *pleura* as possible. A branch of the celiac artery traverses this membrane, and may be injured by carelessness. On cutting through this membrane, the upper testicle is brought to view. This lies on the margin of the lateral spinous processes, surrounded by nerves and bloodvessels. It is a small yellow body, its colour somewhat darkened by the membrane covering it.

Introduce the elevator, and, pushing forward and downward the intestine, the lower testicle is seen, somewhat diagonally to the other, lying centrally between two large bloodvessels. On raising it with the elevator, it comes into contact with the membrane; the lower bloodvessel is then obscure. This vessel is the mesenteric vein that lies between the two testicles. Contiguous to the aorta is the descending *vena cava*. Remove

the lower testicle first in all cases, by rupturing or lacerating the peritoneum, or that part of the membrane between the two large bloodvessels. This is done with the tenaculum. The operator cannot be deceived on this point; as soon as the membrane is divided, the testicle presents a shining or bright yellow appearance. When this is done, introduce the *tube* and *hair*,* carrying the hair into the rupture; then pass the elevator under the testicle, in the loop of the hair. With the tube close against the body of the testicle, draw the hair tense, when, if the elevator and tube be properly adjusted, the hair catches the cord over the testis. Leaving the elevator remaining under the testicle, holding the tube with the left hand and fore finger, bearing it slightly against the spermatic cord, with the right thumb and fore finger hold of the knot formed in the hair, the second and third fingers passed through it, give it a sawing, or rotary motion, which will soon divide the cord. Take it out with the elevator or forceps.

* The Chinese employ as a tube a small quill.

The upper one is removed nearly in the same way. To rupture the *peritoneum*, use the *forceps* instead of the *tenaculum*, and cut it with the knife, near the centre of the testicle. There is generally a slight connexion of the upper part with the diaphragm; it may be loosened with the knife. The edges of the outer wound are to be brought together with a single stitch.

It is most difficult to remove the lower, but the real danger is with the upper, as the aorta, or chief bloodvessel of the body, lies contiguous to it. The spermatic artery, or vessel leading from this main trunk to the upper testicle, is very short.

As soon as the operation is over, let the subject run. If he lives ten minutes after, or even commences feeding, he is out of danger. The female is operated on in the same manner, but on the opposite side.

In the description of the operation given above, the writer says that it is of no consequence when the operation is performed, but he prefers the summer season, and upon fowls under a year old. In France it is per-

formed towards autumn, and upon the chickens of that year, as soon as they begin to crow. It is well known that the testicles are largest in summer, and more injected with bloodvessels; this seems to indicate that the winter would be the best season, taking care to guard the fowls from the cold weather for a few weeks after the operation. In France it is always thought necessary to cut off the comb of the cock after the operation.

The capon, after the operation, exhibits changes similar to those observed among others of the brute creation. He becomes quiet and gentle, an enormous feeder, and accumulates fat rapidly. He has been taught to take care of chickens, and even to sit upon eggs, but these appear to be idle and useless experiments. They bring a large price, and are usually double the ordinary size. Mr. Keeler, whose account has been followed above, states that an acquaintance of his sold in one season twelve pairs, at the rate of five dollars per pair. They weighed from nine to ten and a half pounds each.

In performing the operation, care must be taken to obliterate every portion of the testicle, or it will be a failure. Capons require to be kept for eighteen months or two years before they attain their full size, but only require to be kept up for fattening about a couple of weeks before being killed.

CHAPTER X.

Diseases of Fowls.—Gapes.—Chip.—Purging.—Costiveness.—
Distention of the Crop.—Inflammation of the Oil-bag.—Roup.
—Lice.—Amputation of the Wing.

THE diseases of the common fowl are, in this climate, few in number, and are usually controlled by adequate treatment. They may be divided into those which occur to the chicken, and those only known in the adult fowl.

1. *Diseases of the Young.*—The most destructive is what is called the gapes. This is known by the following symptoms. A few days after the chick is hatched, instead

of running about in a lively manner, it droops and becomes stupid and stationary. It frequently raises its head and gasps as if for want of breath. From this symptom the disease is called the gapes. This is accompanied by frequent and violent sneezing. If the disease is allowed to run on, this state continues for a week or ten days, when the chick dies, quite emaciated. There is usually much fever, and the tip of the tongue becomes white and horny. The cause of this disease is the presence of small red worms, called *Fasciola tracheæ*,* in the windpipe.

Cure.—The most common remedy, and, as I think, the most absurd, is the introduction of a whole pepper-corn down the throat.

* This animal is known under the name of *Fasciola tracheæ*, and is figured and described in the Transactions of the Wernerian Society of Scotland, vol. i., p. 194, pl. 7, fig. 4, by Colonel Montagu, with the following characters :

Poultry Fluke. With a round cylindrical body, tapering at the posterior end ; a large arm or stalk extends from the side, and terminates in an aperture used as a sucker, by which it adheres to the windpipe. Colour, red ; length, about an inch ; diameter, not half a line. Peculiar to the windpipe of young poultry.

This is varied by mixing ground pepper with butter, and forcing it down the throat. This is generally supposed to burn out the disease; it may do that, but, as far as my experience goes, it burns out the chicken with it. Another remedy, which may act as a preventive, comes recommended on more reasonable grounds. It consists in mixing up a small quantity of powdered asafœtida with Indian meal. As this is an unpleasant material to handle, the better way is to put a small quantity in a bag, and put it into the trough of water. I have been assured by those who have tried it that their chickens never have the gapes. Soap mixed with the food, or Indian meal mixed up with soap-suds, has also been highly recommended. The only sure and certain remedy is to resort to a simple operation. Take a small feather and strip off the web, except about an inch and a half at the tip; wet the end and turn it back. Let a person hold the chicken on its back, extending the legs. The operator takes hold of the head of the chicken with his left hand, placing the thumb

and fore finger on each side of the bill, so as to hold the mouth open. Draw the neck out gently, but firmly. Introduce the feather over the tongue, and watch when the chicken breathes, which opens the wind-pipe ; then enter it quick, and do not be afraid after the point is entered. Push down gently two or three inches, and then withdraw the feather, turning it with a cork-screw motion ; the worms will follow, and others will be loosened by sneezing. This may be repeated once more, but not oftener ; the chicken may then be released, and in nine cases out of ten is cured immediately. If they should gape the next day, repeat the operation.

The cause of the appearance of these parasitic worms is not clearly known. They are more common in some districts than in others, and in certain seasons ; very wet and variable seasons are supposed to be favourable to their production. Upon this principle, many good hen-housewives give the chickens nothing but dry food ; and I think I have observed less of this disease

when the food was given in this state, and water only allowed to the hen at brief intervals during the day.

About three weeks or a month from the shell, chickens are affected with another disease known under the name of *chip*. The symptoms are as follows: the chicken sits in a crouching position, with its feathers drooping about it, appears reluctant or unable to move, and keeps up a melancholy chipping, as if in pain. I presume that this is a catarrh, accompanied by much fever. The only treatment I have found efficacious was to put them into some warm place, and allow them no food for twenty-four hours. If the disease was not too far advanced, they would, at the end of this time, become lively, and eat readily. Chickens with this disease should be shut up for some days, and only let out in warm, dry weather.

The other diseases of chickens are very obscure, and some of them I only know by name. *Purging* is said to be remedied by dry food, with chopped meat. *Constipation* is relieved by giving them plenty of fat or grease.

2. *Diseases of the Adult.*—These are, in the present state of our knowledge, almost all incurable, and the sooner they are put out of the way the better. When the cause is obvious, something may rationally be attempted. A broken leg, for instance, may be put in splints and tied up, the fowl being kept apart from others. Sometimes the fowl may be seen drooping, and, upon examination, the crop may be found over-distended with grain or gravel: the obvious remedy in this case is to make a cut two inches long into the crop, take out its contents, and sew it up again: this may be done with perfect safety. Sometimes I have known fowls to have their crops enormously distended with the small, yellowish-brown beetle called the rose-bug. I proceeded to operate in the same manner upon these, but they all died. Upon examining them, the cause of their death was obvious: the bugs had fastened their claws into the very substance of the crop and gullet, and the fowls had died from inflammation. I must confess I know of no remedy for such a

complaint. The combs and wattles of fowls are occasionally frozen. The best preventive is a warm fowl-house: it does not appear to influence the general health.

Occasionally we find a hen with its feathers rumped and hanging loosely about her, at a season when she could not be supposed to be moulting. Upon examination, the gland on the rump is frequently found to be swollen. This must be treated like an ordinary boil. If there appears to be fluctuating matter in it, open it with a knife, and put on it a diachylon or gum plaster. There is a disease described in the English poultry books under the name of *Roup*. The fowl appears stupified, its eyes are inflamed, and there is a discharge from its nostrils. The disease is supposed to resemble the glanders in horses, and is said to be highly infectious. Instead of following the advice of the said poultry books, which is to place it in an infirmary or hospital by itself, and then to try all sorts of rational and irrational experiments upon it, we should advise killing it outright, and burying the body.

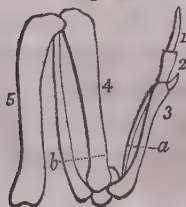
This is the ordinary dictate of humanity. As far as I can learn, this disease rarely, if ever, appears in our climate.

Lice are one of the most common annoyances of poultry, although they may be said to be common to them at all times. Three species are described on the common fowl. Their abundance is generally caused by want of cleanliness or spare feed. Fowls rid themselves of lice by dusting themselves in sand or ashes, and this suggests the appropriate remedy. Frequent whitewashing the hen-house will prevent their great increase. Some odd remedies have been suggested, such as rubbing lard under the wings and on the rump, rubbing the fowl with water in which potato-skins have been boiled, and even pulling out a few feathers from the ends of the wings. I have known a whole poultry-yard to be rid of lice in a short time by rubbing on the sides of every fowl a little lard into which a small quantity of turpentine had been incorporated. A highly-recommended remedy is to mix up sulphur with Indian meal and water, in the

proportion of half a pound of the sulphur to a dozen fowls, given at intervals of about three days, in equally-divided doses.

A favourite fowl may have its wing broken, or we may wish to attempt to domesticate some wild fowl, when it will be necessary to amputate the wing in order to keep them within our control. This is usually done in a coarse, bungling way, by crushing the bone with a strong pair of scissors, and then with a redhot iron searing the part, in order to prevent the effusion of blood. This is unnecessarily painful, and in eight cases out of ten is accompanied with loss of life. All this pain may be avoided, and the operation rendered more secure, by the following process, which prevents the loss of blood, and the subsequent inflammation is comparatively trifling.

Fig. 8



We must first, however, invite the attention of the operator to the annexed figure (fig. 8), which exhibits the principal bones to be operated upon. It is not worth while to enter

into minute anatomical details, but it is sufficient to observe that the principal blood-vessels lie underneath the bones, and not far from them. From the bones marked 1, 2, and 3, proceed the great primaries or quill feathers, usually consisting of ten or twelve. From 4, which corresponds with the fore arm in man, proceed the lesser or secondary quills, consisting of twelve or fourteen feathers, and which cover the quills when the wing is closed. If we desire to take off only eight or nine quills, which are sufficient for ducks, operate at *a*; but for partridges, quails, and common fowls, operate at *b*. Make use of a long needle, and a double, strong, waxed thread. Let the bird be held by an assistant, and, having cut away the feathers at the place to be operated on, pass the needle through between the bones as close as possible to the lesser bone, taking the inside of that bone for guiding the point of the needle. Return the needle on the opposite side of the great bone, a little within the skin; then bring the two ends together and make a double turn in the first knot, to pre-

vent slipping after tying, and draw the knot strongly so as to form a ligature upon the vessels, and then tie a second knot. By this means the large brachial artery, which lies on the inside of the larger bone, is secured, and the danger of bleeding to death is prevented. Then place the wing on a block of wood, and with a sharp knife and a hammer cut off the bones, about an eighth of an inch beyond the ligature.

If it becomes necessary, from some accident, to amputate at *b*, pass the needle as before; then with a sharp knife cut down through the flesh, and separate the bone in the manner before described; in this case, however, the ligature should pass around each bone separately. No after-treatment in either case is necessary.

The French describe a disease incident to fowls which they call *la pépie*, but which I have not seen. The fowl with this disease ceases drinking and clucking, the comb becomes pale, and its movements languid. Upon opening the mouth, a yellowish pelticle is found on the tip of the tongue. This

is recommended to be taken off with a pin, and the fowl afterward forced to swallow some wine. We do not comprehend either the nature of the disease or the rationality of the remedy. There is, however, a disease incident to fowls which is always fatal, but is fortunately of rare occurrence. A hen is observed to be sluggish in her motions, averse to the cock, carries her head and neck up straight, with her belly dragging on the ground. Often she feeds eagerly and voraciously, and becomes very fat, and even continues to lay, until some day she is found dead in the poultry-yard. Upon opening her, the oviduct is discovered to be ruptured, and an egg in the last stage of putrefaction is found among her intestines.

With one general remark we will close this chapter. Whenever the nature of the disease in adult fowls is unknown, and interrupts their usual functions, or, if known, is utterly irremediable, such as convulsions, blindness, the bursting of an egg in the body, or some internal ulcer, humanity re-

quires that it should be put out of misery at once. It is the kindest act of mercy, and is at the same time required by its interference with the ordinary operations of the poultry-yard.

CHAPTER XI.

Ordinary Food of Fowls.—A frequent Change necessary.—Estimate of the comparative Value of Eggs and Chickens.—Hints to Writers on this Subject.—Determination of the Age of Fowls exposed in the Markets.—Value of the Poultry in the United States.

FOWLS are essentially granivorous, and in a slight degree herbivorous ; in other words, they live chiefly upon grain and seeds, and occasionally upon grasses. In a state of nature, this forms the bulk of their food. Domestication, which produces so many changes in their functions and habits, is also not without its influence upon their appetites ; hence we see them in a poultry-yard devouring all sorts of meat, however putrid, and the most rancid fat with the greatest avidity.

Of all the grains, they appear to prefer Indian corn or maize. I have several times

placed before them equal quantities of maize, wheat, buckwheat, oats, and rye, and the corn was invariably first eaten. Next to this, wheat is preferred, but its price deters many from using it. Some have recommended to feed fowls with tail wheat, or what is known under the name of wheat-screenings, upon the same rational principle, I presume, that they would give bran to their horses, instead of oats or corn.

The cultivation of the common sunflower, *Helianthus annuus*, has been highly recommended by some poultry breeders. In Russia, where these seeds are used by man and beast to a great extent, they are said to fatten fowls better than anything else, and to increase the number of eggs more than any other kind of grain. The seeds are oily, and very nutritious. Some content themselves with throwing down the heads of the plant, when ripe, to the fowls, to help themselves; others, more careful, thresh them out gently, and preserve them for future use. They are, however, apt to become rancid and mouldy if kept together for any considerable

length of time in large quantities. Much of this might be obviated by drying them previously in the sun, and keeping them, in divided parcels, in dry and cool situations. They are excellent in fattening fowls, and, in spite of the common belief that fat fowls do not lay well, we assert that the better they are fed, the more numerous, larger, and better flavoured are the eggs. We believe it, however, to be true, that fat hens do not make very steady sitters, but this is compensated by the increased number of eggs.

The seeds of broom-corn, *Sorghum saccharatum*, are particularly relished by fowls, and a bushel of them, it is said, will go as far as a bushel of wheat. I am not aware that they are ever offered for sale, but when the plant is cultivated for brooms, it would be well to preserve the seeds for feed.

From various experiments, it would appear that, when as much grain is placed before fowls as they can eat, ten fowls will consume a quart of grain daily. This, however, only occurs when they can obtain no other food. When they have the range of a large

barnyard, and are allowed to run about the fields in spring and summer during a part of the day, as recommended in the preceding pages, they will scarcely consume more than half that quantity.

The best practice we believe to be, not to confine them for any length of time to any particular kind of food, but to vary it every week or two; or, mix up in one bin equal quantities of corn, wheat, rye, barley, oats, and buckwheat, and from this fill up the feeding-hopper already described. If the food is previously soaked in water, I have no doubt that it would go much farther than in a dry state, but I have as yet made no precise experiments on this subject. Once or twice a week it is a good plan to give them raw potatoes, chopped up into small pieces, or, what is better, potatoes which have been steamed or boiled. Sweet and rotten apples, all the refuse vegetables of the kitchen, fat skimmed from the kettles, and tainted pieces of meat, will be greedily devoured by fowls, and may be given to them without stint. In short, there is hard-

ly anything which you may not give them except salt. I have read an account of one who killed fifty fowls by giving them meal which had been salted for a horse, and of another who destroyed a flock of thirty young turkeys by mixing a spoonful of salt in their food. When fowls are not permitted to range about in summer at all, it is well to supply them daily with fresh grass cut very short, and such weeds as are taken from the garden.

To those who keep but a few fowls, which are left to shift for themselves, and who are satisfied with their produce, whether in eggs or chickens, provided they have no trouble about them, the following remarks will have but little interest. We propose to offer a few remarks on the keeping of fowls as an article of profit, and the value of their products. That this in the aggregate must be very considerable, no one can entertain the least doubt, and the amount of capital invested in the United States in this apparently inconsiderable branch of domestic industry is very great. This will be evident from

the following abstract from the returns made by the census of 1840, exhibiting the total value of all the poultry in the various states and territories of the Union.

States.	Value in Dollars.	States.	Value in Dollars.
Maine	\$123,171	Kentucky	\$536,439
New-Hampshire	97,862	Tennessee	581,531
Vermont	176,437	Louisiana	273,314
Massachusetts	540,295	Mississippi	369,481
Rhode Island	61,492	Alabama	829,220
Connecticut	176,659	Missouri	230,283
New-York	2,373,029	Indiana	393,228
New-Jersey	412,487	Illinois	330,968
Pennsylvania	1,033,172	Michigan	82,730
Delaware	47,465	Arkansas	93,549
Maryland	219,159	Florida (incomplete)	61,007
Virginia	752,467	Wisconsin	16,167
North Carolina	544,125	Iowa	17,101
South Carolina	590,594	District of Columbia	3,092
Georgia	473,158		
Ohio	734,931	Total	\$12,176,170

In the outset of our calculations of profits, we are met with this difficulty, that much of the advantage must depend upon the vicinity or readiness of access to a market. Perhaps the fairest estimate would be made by considering the produce of a poultry-yard as dedicated entirely to the consumption of the family, and establishing its value at some fixed rate, even although that should be considerably under the nominal market value.

It is very well known that every article of food has now (1843) reached its lowest point

of depression ; and it is equally well known that the consumer, especially in large cities, buys his eggs and fowls at two, and often three prices, or, in other words, they furnish a profit to two or three persons before it passes into his hands. The farmer, for instance, we will suppose, sells his pair of chickens for twenty-five cents to the *market-er* (or *higler*, as he is called in England), who drives about the country and buys them up of the farmers. This person puts on ten cents, and the marketman in the city adds ten cents more. The profits of this last are usually greater than this sum. Some farmers are in the practice of dressing their own fowls for market, and consign them to a marketman, who sells them to the best advantage, and charges twelve and a half per cent. for his trouble. I cannot say by which method the consumer pays the most, but the latter, undoubtedly, gives the best returns to the poultry breeder.

The question has frequently been asked, Which are most profitable, eggs or chickens ? and the general opinion inclines to the for-

mer. This, however, appears to be one of those opinions taken up and adopted without due examination. Fifty hens, if well kept, will produce from five to seven thousand eggs annually, or, at the rate of a cent a piece, from fifty to seventy dollars. If we confine our attention exclusively to chickens, it would be within bounds to estimate their number at four hundred, or two hundred pairs, which, at the rate of half a dollar per pair, would produce one hundred dollars. It is supposed that the surplus in eggs would pay for all the feed required.

These are, however, only approximations to the value of the products from poultry, as much must depend on the capability of the poulterer to take advantage of the best markets, and his skill in fattening them to the proper point. In England, where every department of labour has received its most minute subdivision, the business of fattening poultry is engrossed entirely by the poulterer, so that every pair of fowls passes through four hands before it reaches the consumer. These are the breeder, the higler, the poul-

terer, and the marketman; the two latter are, however, often united. We have already seen, by the published statements, that in some instances the profits are actually over one hundred per cent., and under the best management this may be doubled. It is probable that an equal attention to both products simultaneously will be found most advantageous. Those who have carefully attended to this subject will confer a lasting favour upon the community by publishing the results of their experience. To render this more extensively useful, their statements should include, 1. The number of cocks and hens, and a description of the breed; 2. The circumstances under which they are kept, and the nature of their food; 3. The cost of food and attendance; 4. Nett value of eggs and chickens.

We conclude this part of our subject by a few brief hints to those who purchase poultry in the markets. When fowls are exposed for sale with their legs cut off, it may be presumed that they are old, and adapted only for broth. Some judgment of the age

of fowls may be formed by the appearance of the legs and feet ; in aged fowls these are rough and stiff, and the toes stout and worn ; the skin on the body is also coarse and rough ; but in regard to this latter circumstance, there is a great difference even among fowls of the same age. Yellow-legged fowls have a smoother skin than others. In young fowls, the lower part of the breast bone is soft and bends easily, and the skin under the wings yields readily to the pressure of the fingers. In young geese and ducks, the webs of the toes are very thin, and almost transparent, and the skin may be ripped up with a pin. These hints are worth attending to, for the marketmen are often in the habit of putting up an old and a young one in the same pair, and you may have on your table a venerable, tough old chanticleer side by side with his descendant in the eighth or tenth generation.

CHAPTER XII.

The Duck.—Domesticated Species.—Mallard.—Muscovy.—Wood Duck.—Best Mode of fattening them.—Canvass-back Duck.—Attempts to Domesticate it.

OF the forty-five species of ducks found in Europe and America, but three have been domesticated, and of these only two have been so completely tamed as to be rendered subservient to the uses of man. These two are,

1. *Anas boschas*, or *Mallard*, the stock of our common tame duck, and,

2. *Anas (Gymnathus) moschata*, *Muscovy Duck*, improperly so called, for it is exclusively a native, in its wild state, of the tropical regions of America.

The other, not so completely domesticated, is the

3. *Anas sponsa*, *Wood or Summer Duck*, remarkable for its gaudy plumage.

Of the common tame duck there are several varieties, but the most profitable are

those with a tuft of feathers on one side of the head, resembling a large cockade. They lay in the course of a year, when well kept, more than one hundred bluish eggs; but as they drop them about anywhere, even in water, they are usually shut up at night during the laying season, and only permitted to have access to the water in the afternoon. Nor is it usual to trust ducks with the rearing of a brood; this is more effectually done by placing the eggs under a sitting hen. They are gross feeders, and will greedily devour the most corrupt and putrid animal and vegetable substances.

The most profitable mode of raising ducks for market, or for one's own use, is to shut them up in a pen well littered with straw and frequently renewed, and never to allow them to have any water to swim in, but enough to satisfy their thirst. Give them a full supply of corn, oats, boiled potatoes, and as much fat, and even tainted meat or fish, with cabbages, or lettuce, or parsley, as they can devour. Continue this for a month, and then let them have only corn

and oats, with pure water, and at the end of two months or six weeks from the shell, they are sweet-flavoured, fat, and fit for the table. In consequence of their great voracity, it is not profitable to keep them much longer. In the autumn and winter, the old ones may be permitted to take to the water. *Cobbet*, in his "Cottage Economy," a book which should find a place on the bookshelf of every farmer, observes, that ducks will feed on garbage, and all sorts of filthy things, but their flesh is *strong* and bad in proportion. "They are, on Long Island, fattened upon a coarse kind of crab, called a horse-foot (*Limulus polyphemus*), prodigious quantities of which are cast upon the shores. The young ducks grow very fast upon this, and very fat; but wo unto him that has to *smell* them when they come from the spit; and as for *eating* them, a man must have a stomach indeed to do that."

It is, however, within my own experience, that, no matter what may have been the previous food of the duck, if we give them as much corn or oats, with a little fat, as they

can eat, for about a fortnight, their flavour will be all that can be desired.

Awkward and clumsy as the duck appears to be, and ill provided as he is with offensive arms, he is more than a match for the stoutest cock in the poultry-yard; and as these combats frequently take place, it is well to keep ducks in a separate enclosure. Ducks in this latitude commence laying about the middle or end of March, according to the season, and one drake is said to be required for five ducks. The term of sitting extends to thirty days.

The *Wood Duck*, which we have noticed above, has been reared in a state of domestication for the sake of its extraordinary beauty and the price which it brings in the market alive. It is not uncommon to obtain from three to four dollars a pair, male and female, and this may render it an object to raise them. This, however, cannot be done advantageously, unless you have a pond with a convenient house in the centre, or a hollow log, which appears to suit them better.

We earnestly hope that some well-plan-

ned attempts will be made to domesticate our delicious canvass-back duck (*Anas valisneria*). It has a large carcass, which will doubtless be rendered still larger in a state of domestication.*

The *Muscovy*, or, more properly, the *Musk Duck*, is well worthy the attention of the farmer, although it does not seem so well adapted for the colder climate of the Middle States. The same plan should be adopted as with the common duck, and the ducklings should be disposed of as soon as they are fattened. The old duck has a strong and disagreeable rank and musky flavour, which renders it necessary to remove the oil-bag when preparing it for the spit. This species habitually breed on trees, and therefore some contrivance resembling a tree must be employed to encourage them to lay.

* Since writing the above, I learn that the canvass-back has been introduced within a few years into England, and that the experiments already being made to domesticate them promise complete success.

CHAPTER XIII.

The Goose.—Domesticated Species.—Common Goose.—Large Bremen Breed.—Wild Goose.—Mongrels.—Chinese.—The Brant.—Plucking Live Geese as practised in England.—Remedy proposed.—Extensive Pastures required.—The Swan.

OF this genus and its kindred five species have been domesticated. These are,

1. *Anser cinereus* (Meyer), or *Gray Lag*, from Europe, the original stock of our common domestic goose.

2. *Anser Canadensis*, the *Wild Goose* of North America.

3. *A. cygnoides*, the *China Goose*.

4. *Anser bernicla*, or *Brant*, from the northern parts of Europe and America.

5. *Cygnus ferus*, or *Swan of Europe*.

The common gray goose is a quiet, inoffensive bird, and lives to a great age. There are authenticated statements to the effect that they live to the age of seventy or eighty years. She sits upon her eggs from

twenty-eight to thirty days, covering from eleven to fifteen eggs. If well kept, she will lay many more eggs than she can cover, and bring forward two broods during a year. They are scarcely profitable to keep unless they have the range of an extensive pasture or common, when they require no other attention or food. In some parts of England which are of a marshy description, such as Lincolnshire, the raising of geese is conducted on a large scale. The account given by Pennant* of their management in those countries is curious.

“ A single person has frequently a flock of a thousand old geese, each of which will rear seven, so that towards the end of the year he will be master of eight thousand. During the breeding season, these birds are lodged in the same houses with the inhabitants, and even in their very bedchambers; in every apartment are three rows of coarse wicker pens, placed one above another. Each bird has its separate lodge divided from the other, which it keeps possession of

* Tour in Scotland, p. 8.

during the time of sitting. A person called a gozzard, *i. e.*, goose-herd, attends the flock, and twice a day drives the whole to water; then brings them back to their habitations, helping those that live in the upper stories to their nests, without ever misplacing a single bird.

“The geese are plucked five times in the year: the first plucking is at Lady-day (March 25), for feathers and quills; and the same is renewed four times more between that and Michaelmas (Sept. 29), for the feathers only. The old geese submit quietly to the operation, but the young ones are very noisy and unruly. I once saw this performed, and observed that goslings of six weeks old were not spared; for their tails were plucked, as I was told, to habituate them early to what they were to come to. If the season proves cold, numbers of the geese die by this barbarous custom. When the flocks are numerous, about ten pluckers are employed, each with a coarse apron up to his chin.

“Vast numbers of geese are driven annual-

ly to London to supply the markets, among them all the superannuated geese and ganders (called here Cag Mags), which, by a long course of plucking, prove uncommonly tough and dry, and fatigue the jaws of the good citizens who are so unfortunate as to meet with them."

The practice of plucking live geese, which some English travellers have described as a barbarous custom peculiar to America, is certainly to be avoided, if possible. A remedy has recently been proposed, which I should be pleased to find generally adopted. Instead of plucking, let the feathers be removed with sharp scissors. Much unnecessary torture and irritation to the system is saved, and the feathers themselves are in better order than by the old system.

In this country it is usual to pluck geese twice or three times a year. The first plucking is about six weeks after it comes off the nest, and this is repeated at intervals of six weeks. It is thought that four geese will furnish a pound of feathers during the season. This is usually sold for fifty cents

per pound. In plucking geese, it is important to select a fine day, and only those in perfect health should be subjected to the operation; the down under the wings is usually left untouched, as it is very slowly replaced. The French gooseherds are in the practice of rubbing every goose, after the operation of plucking, with a saturated solution of salt in vinegar. It is, however, at best a cruel practice, and we rejoice in the belief that the introduction of steel pens will, before long, render it unnecessary to resort to a part, at least, of this barbarity.

The goose in this climate will begin to lay in February, or the early part of March, according to the severity or mildness of the season. As soon as she is observed to carry straws in her bill, a nest should be prepared for her in some suitable place, and after she commences sitting, food should be placed near the nest. The goose lays from fifteen to eighteen eggs, and her period of incubation lasts from twenty-seven to thirty days.

With us, the young brood, provided they

have a good run of grass, require, or, at least, receive very little attention. To make them profitable, however, they should be regularly fed twice a day. The food may consist of cracked corn, sliced cabbages, buckwheat, carrots, turnips, either boiled or raw, thrown into shallow vessels containing water. Skimmed milk, when it can be readily obtained, is to be preferred, as it has a greater tendency to fatten them. It is a common practice with our farmers to allow their geese to run in the public highways, to the great annoyance of travellers, and of their neighbours. Such practices are illegal, and subject them to heavy penalties in case of accidents; but surely no honest man, who desires not to offer any impediments to the travelling public, nor to suffer the property of his neighbour to be injured, need be reminded that he is acting against the law.

The stupidity of the goose has passed into a proverb, and yet those who have raised many, attribute to them more sagacity than is generally found in any other domesticated fowl. In the London Magazine of Natu-

ral History there occurs a remarkable anecdote in point. An old goose, that had been sitting upon her eggs for two weeks in a farmer's kitchen, was perceived on a sudden to be taken violently ill. She soon after left the nest and repaired to an outhouse, where there was a young goose of the first year; this she brought into the kitchen. The young one immediately scrambled into the old one's nest, sat, hatched, and afterward brought up the brood. The old goose, as soon as the young one had taken her place, sat down by the side of the nest, and shortly after died. The young goose had never been in the habit of entering the kitchen before, and the person who relates the transaction received the account the same day it occurred from his sister, who witnessed it.

In Europe, where the luxury of the table is proudly pointed to as one of the indices of a refined civilization, the unfortunate goose is subjected to a series of cruel tortures, which we should say could only be practised by a tribe of miserable barbarians. The goose is first deprived of its eyes, then

nailed by its feet to a board, and placed in an oven at a heat of 80° of Fahrenheit. In this state it is stuffed four times a day, and kept for three weeks, or until it dies, with its liver enormously enlarged, and, of course, diseased. This festering liver forms the vaunted *paté de foie gras*, which is put up in lard, and has been deemed worthy of exportation to this country. Its high price renders it, of course, an object of ambition to those who wish to figure in the ranks of fashion, but, from the nature of the article, not more than an ounce or two can be eaten at a time. There is a story current of an Englishman at Paris who, having heard it much praised, sent for a pot of it containing a pound, and ate it all up at one meal, together with the lard in which it was imbedded. He observed afterward that he did not think much of it, "for it made him as sick as a horse for several days!"

Within the last ten or twelve years, a new breed of geese has been introduced into the United States from Bremen, by Mr. James Sisson, of Rhode Island, which is

rapidly taking the place of the old stock. They are usually of a pure white, grow to a much larger size, attaining the weight of eighteen or twenty pounds, while the common gray goose averages from eight to ten pounds only. They are also raised with great ease, fatten readily with comparatively less food, and have a very superior flavour.

Where one has access to, or control over a large pond, the raising of wild geese (*Anser Canadensis*) may be made profitable. When they are turned in with the common goose, the wild gander attaches himself to one exclusively, and neglects all others; the *mongrel* produced between them is of a superior flavour, and has a corresponding market value. We know of some persons who keep wild geese in lonely situations, and every year contrive by these means to decoy flocks of wild geese flying over in their annual migrations. Mr. Nuttall relates an instance of a female of this species which joined a party of wild geese and disappeared until autumn; at length, out of a passing flock, the farmer

observed three geese to detach themselves from their companions, and, after wheeling round several times, alight in his barnyard, when, to his astonishment, he recognised in one of the three his long-lost fugitive, who had now returned, accompanied by her offspring, to share the hospitality of her former acquaintance. Many parallel instances of this kind are on record.

I know very little of the stately, swan-like China goose, distinguished by the horny knob on its bill. It is said to be very prolific, and its meat to be well flavoured. From the very few which I have seen about farmyards, I should think that it was not held in much estimation.

The fat of the goose, commonly called goose-grease, is considered to be peculiarly subtile, penetrating, and resolvent, and is generally carefully preserved for domestic applications.

Besides the ordinary diseases of geese, which are similar to those of other domesticated birds, and which are to be treated in the same manner, they are subject to an-

other, which is almost peculiar to this tribe. It is a species of apoplexy, in which the animal drops down suddenly, and, unless assisted, dies on the spot. The remedy is to open with a penknife or lancet a vein under the foot.

The *Brant*, which in its wild state is highly esteemed (particularly the young) for the exquisite delicacy of its meat, has been domesticated. This does not, however, appear to have improved it much, and its small size will scarcely render it (except for curiosity) an object of much attention.

The *Swan* is only kept as an ornament on pieces of water in pleasure-grounds, and, as we suppose, is chiefly valued for the poetic associations connected with its history. In England, I observe that its place is now almost exclusively occupied at the present day by the *A. Canadensis*, or common *wild goose* of this country. In Europe the swan begins to lay in February, and sits upon seven or eight eggs. The period of incubation lasts six weeks.

CHAPTER XIV.

The Turkey.—Its Origin.—Food in Summer chiefly Insects.—Treatment of the Young.—To be guarded against Wet.—Mongrels.—Caponizing.—The Christmas and Thanksgiving Turkey.

THE Turkey (*Meleagris gallopavo* of *Linnæus*) is one of the noblest of the feathered tribe which has been made subservient to the use of mankind. It is a native of this country, where it was found domesticated by the first European discoverers. There is another species in Honduras, Yucatan, and other places in South America, *M. ocellata*, but I have not learned whether it has ever been domesticated. The common turkey is still found in a wild state in some parts of New-York, and in the adjoining States of New-Jersey and Pennsylvania.

It is difficult to imagine how the absurd English name of turkey came to be applied to this noble bird. Probably it arose from the ignorant belief in England that it came

originally from Turkey. The French named them *Coq et Poule d'Inde*, because they were natives of the West Indies, and this was subsequently corrupted into *Dindon*, a name which they still retains.

The weight of the wild turkey hen is usually about nine pounds. The wild turkey cocks are larger, and vary more in their weight. Usually they weigh from fifteen to eighteen pounds. Audubon mentions having seen one exposed for sale at Louisville which weighed thirty-six pounds.

The turkey is a hardy bird, but requires a great quantity of food. It has, therefore, become a general practice to kill off the whole brood in the autumn, reserving only a cock and two or three hens to keep through the winter. In the ordinary way, as soon as the young are six weeks old, it is usual to turn out the hen, and let her and her brood shift for themselves until autumn, when they are shut up and fattened. They are great wanderers, and often prove a source of deserved vexation to the unconscientious farmer who permits them thus to

ramble about with the positive knowledge before his eyes that they will injure his neighbours. I am told that on the great plains of Long Island, turkeys are raised in great numbers and with much ease, living on the grasshoppers and other insects which abound there. The only enemy they have to fear is the crow, which frequently makes a feast upon the young. When thus permitted to wander, they will steal their nests, as it is termed, but they seldom return to the farmhouse with a large brood.

A farmer in Westchester county, some years since, procured a young wild hen turkey in order to make experiments in crossing the breed, but, owing to some circumstance, it did not succeed, and in the ensuing spring she disappeared. In the following autumn she returned, followed by a large brood. These were quite shy, but by a little management they were secured in a coop, and the mother allowed her liberty. She remained on the farm until the succeeding spring, when she again disappeared, and returned in the autumn with another brood.

This course she repeated for several successive years.

The wild turkey will breed readily with the domesticated one, and the produce is readily recognised by the increased brilliancy of its coppery metallic hues, and the absence of a broad, whitish band on the tip of the tail coverts. These command a higher price in the market, on account of their superior game flavour.

The turkey forms an excellent subject for caponizing.* The anatomy of the parts is similar to that of the domestic fowl, and the operation offers no increased difficulty. The turkey capon attains a great size, and its roaming propensities are said to be much diminished. We have the turkey of various colours. Neighbours in the country are apt to have them of different colours, in order to distinguish them apart when the flocks mix together. The grayish or white varieties are preferred by some, on account of their beauty, but they are not as hardy as those which are dark coloured or glossy black.

* In China and Java it is frequently caponized.

Although the domestication of the turkey is comparatively recent, yet several varieties have been already obtained. The most remarkable of these is the Top-knot or tufted turkey, which is, however, very rare, the tuft being white in some instances and black in others. I am not aware that this variety possesses any advantageous properties over the others.

The turkey should be confined to the poultry-yard until she has finished laying, when she should be supplied with a suitable nest, in a quiet and retired situation. Many persons prefer to place her eggs under the common hen, as she makes a more quiet and attentive mother. There is no occasion to feed the turkey during incubation, for if your yard is provided with the feeding-hopper already described, she will help herself whenever she requires food.

Incubation with the turkey lasts from twenty-eight to thirty days. As soon as the chicks are hatched, they should be taken with the mother and placed on a piece of grass within an enclosure about ten feet

square, made by boards laid on their edges and secured by wooden pegs. In one corner of this enclosure have a suitable coop, boarded at the bottom, and with a door, which should be closed in wet weather.

Young turkeys are very delicate, and wet weather is their greatest enemy. So well is this known, that our farmers anticipate from what they call "a wet spell," the destruction of the greater part of their brood. This, however, only happens under the old-fashioned "let alone" policy.

The food for young turkeys is Indian meal, with the yolks of eggs chopped fine, and milk turned to curds. As they grow older, they may be furnished with grain, and occasionally refuse pieces of meat, chopped up fine. Where it is proposed to raise turkeys on a large scale, it would be a good plan to keep them within a large enclosure, with a few trees in it to allow them to roost on. By clipping one of the wings of the old ones, and of the young when half grown, the necessity for a very high fence is obviated. After the hens have commenced sit-

ting, the turkey cock (or gobbler, as he is termed by unlettered rustics) should be removed and kept apart from the flock until they are half grown, as he becomes troublesome, and frequently kills the young ones.

The demand for turkeys in winter, and especially for Thanksgiving, New-Year's Day, and Christmas, is so great, that they are usually reserved for that season ; indeed, it is a general belief that they will not fatten properly until cold weather. This, however, is a great mistake, as any one may satisfy himself by making the experiment. By attention to feeding them properly with corn and buckwheat, both of which are improved by previously soaking them in water, or with boiled rice, sweetened with a little sugar or molasses, we may have them ready for the spit at a much earlier period, when they will probably command a higher price than at the seasons above mentioned, when, from the glutted state of the market, they often sell for less than their actual value.

The diseases of turkeys are similar to those of common fowls, and require the

same treatment. Almost all their ailments proceed from wet, which must, of course, be counteracted by the appropriate remedies. The French writers speak of two diseases incidental to turkeys, *le pousse du rouge*, or *the red*, and *le blanc*, or *the white*. The first occurs when their wattles begin to appear, and wet weather comes on; for this they recommend crumbs dipped in wine, pepper, fennel, and other stimulating articles, accompanied with bleeding in the axillary vein. A better practice is to house them, and feed with corn or buckwheat. The second I only know by name, but it appears to arise from exposure to wet, and would seem to require the same treatment. In France they also appear to be liable to an eruptive disease, which is very fatal, but which I have never seen in this country. They are, however, subject to the *scratches*, which is usually attributed to buckwheat feed.

CHAPTER XV.

The Peacock.—Merely Ornamental.—Guinea Fowl.—Pigeons.
—Dovecot.—Squabs and Squeakers.—The Pheasant.—The
Curassow.—Conclusion.

THE Peacock (*Pavo cristatus*) is a native of India, and found still, in a wild state, in Java and Ceylon. The age of the peacock extends to twenty years, and at three years the tail of the young male is fully developed. The cock is mated with three or four hens, and, where the climate agrees with them, they are very prolific. They are chiefly kept for their extraordinary beauty, and are said to be useful in destroying all kinds of reptiles. Unfortunately, however, they are not easily kept within bounds, and are very destructive to gardens. They are also very vicious, and, unless closely watched, will destroy young ducks and chickens. They are eaten on great state occasions in Europe, and at sumptuous entertainments, but the flesh is coarse and ill flavoured.

They live on the same food with other domestic fowls, and require nearly the same treatment.

The *Guinea Fowl* (*Numidia meleagris*) was introduced into Europe and this country from Africa, where it still exists in a wild state. It is too well known to require description. It is fond of low, swampy grounds, but roosts in elevated trees. It lays numerous eggs, but can rarely be induced to cover them, for which reason the eggs are usually placed under the common hen. The male and female are so much alike that they cannot be distinguished by sight alone. The males, however, have a peculiar note by which they may be detected. They are noisy, petulant, and restless birds, attacking the largest inhabitants of the poultry-yard without hesitation. The flesh is much esteemed, and many prize this bird for the number and excellence of its eggs. Its everlasting noise and its quarrelsome disposition render it scarcely a desirable bird to rear. For barnyards in remote and lonely situations it is valued for the protection it

affords to other fowls, for its harsh and never-ceasing cry keeps at a respectful distance all owls, hawks, and other birds of prey.

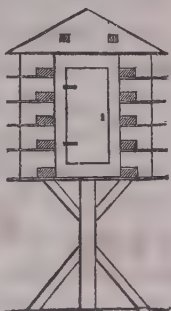
The stock of the common domestic Pigeon is the *Columbia livia* of authors. The ring-dove (*C. palumbus*) and the turtle-dove (*C. turtur*) are often kept by the curious in such matters, but cannot be said to be completely domesticated. Attempts have been made to domesticate our well-known wild pigeon (*C. migratoria*), but hitherto without success.*

A dovecot or pigeon-house, when attached to any of the farm buildings, should, in preference, be placed in one where no noisy operations are carried on. The greatest enemies they have to contend with are cats and rats, and it is difficult to prevent their access to the pigeon-house thus constructed. A better plan is to raise a boarded house, on a strong post, powerfully braced, the interior sides of which are lined

* See letter of De Witt Clinton, Med. and Phil. Register, vol. iii., p. 89.

with boxes for the birds (*a*), and the exterior, east and west sides, with balconies or sills for them to alight on and enter their boxes. The north and south sides are lined with boxes inside, but without openings, as being too warm on one side and too cold on the other. This is the com-

Fig. 10.



mon form used in France, and the bottom should be elevated from eight to fifteen feet from the ground. It may be rendered a tasteful and highly ornamental object.

The pigeon is monogamous, that is, the male attaches himself exclusively to one female, and this attachment is reciprocal. For this reason, each pair requires two holes or nests about eighteen inches wide, separated by a low partition, and carefully closed up from the others. This is obviously required, for when the young are a fortnight or three weeks old, a good hen pigeon will leave them to the care of the cock, and commence laying and setting again. The door at one

end is for the convenience of entering to clean the nests, to replenish the water and food, and to take out such of the squabs or young as may be required for use. In some part of the pigeon-house should be kept a small feeding-hopper, and a water-bottle reversed in a pan. What is called a *salt cat* is placed in the dovecots in Europe, to attach pigeons to the place, and, at the same time, to furnish them with a grateful condiment. A jar or any cylindrical vessel is perforated with holes to admit the bills of the pigeons. This is filled with gravel or sand, loam, the rubbish of old walls, or slacked lime, about a gallon each. To this is added a pound of cummin seed and a handful of coarse salt, and the whole mixed up with stale wine. They are very fond of this mixture. To make a pigeon-house available to its greatest extent, it should be cleaned out slightly every day, and thoroughly once a week, spreading fresh sand on the floor.

Many persons experience great difficulty in commencing a pigeon establishment, as they usually desert it for the nearest pigeon-

house, unless great pains are taken with them. The best method is to commence with one or two pairs, and keep them shut up until they have produced offspring; you are then sure of their attachment to the place.

The pigeon lays two eggs, and sits fifteen days, relieved at intervals by the male. The young are fed about fifteen days longer, when they are turned out to shift for themselves. While fed by their parents, the young are called *squabs*, and under six months, *squeakers*. The pigeon, in a suitable climate, and plentifully supplied with food, is said to hatch a brood every month in the year. In this climate they produce from eight to nine broods annually; it will be perceived, from this, that they may be made to contribute no inconsiderable item of food to the farmer's table.

Cobbet, in speaking of pigeons, very properly observes, "It is not supposed that there can be much profit attached to them, but they are of this use: they are very pretty creatures; very interesting in their manners; they are an object to delight children,

and to give them the *early habit* of fondness for animals, and of *setting a value* on them, which, as I have often observed, is a very great thing. For the *man* to be trustworthy in this respect, the *boy* must have been in the *habit* of being kind and considerate towards animals; and nothing is so likely to give him that excellent habit as his seeing from his very birth animals taken great care of, and treated with great kindness by his parents, and now and then having a little thing to call *his own*."

It may be amusing to compare this passage, marked by the impress of a masculine mind, with the following from a French poultry book, which is so eminently *French* that it would suffer by a translation: "Est il quelqu'un qui, dans sa vie n'ait pas désiré quelque fois d'être *pigeon*? de goûter les plaisirs d'un naturel si doux, d'une fidélité si tendre? Voici donc les plus heureux comme les plus aimables êtres dont je me sois occupée jusqu' alors, et mon travail m'occupera agréablement."

When only a few pigeons are kept, they

require no particular attention, and may be fed with the other poultry in the barnyard.

With regard to the *Pheasant* (*Phasianus colchicus*), which has been naturalized in France and England, and kept at an immense expense in preserves, I am not aware that it has ever been introduced to any extent in this country. It is a heavy bird, of slow flight, and even if introduced, would soon be extirpated.

The *Curassow* (*Crax alector*), from South America, is a far nobler and more useful bird. It is as large as a turkey, is already domesticated, and associates readily with the other poultry, partaking of the same food. Its size, disposition, and the delicacy of its flesh, all recommend its introduction here. It is probable that it would thrive best in the more Southern States.

THE END.













